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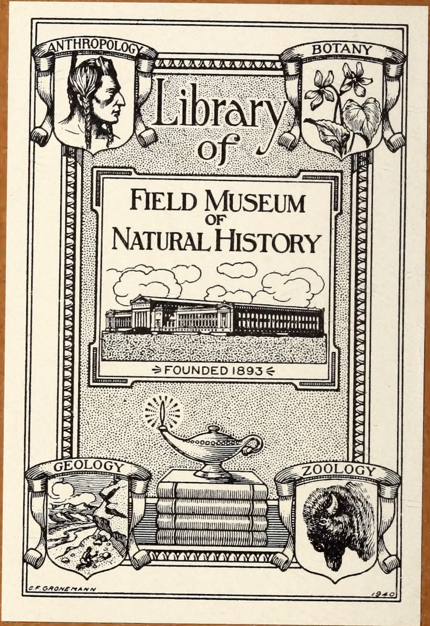

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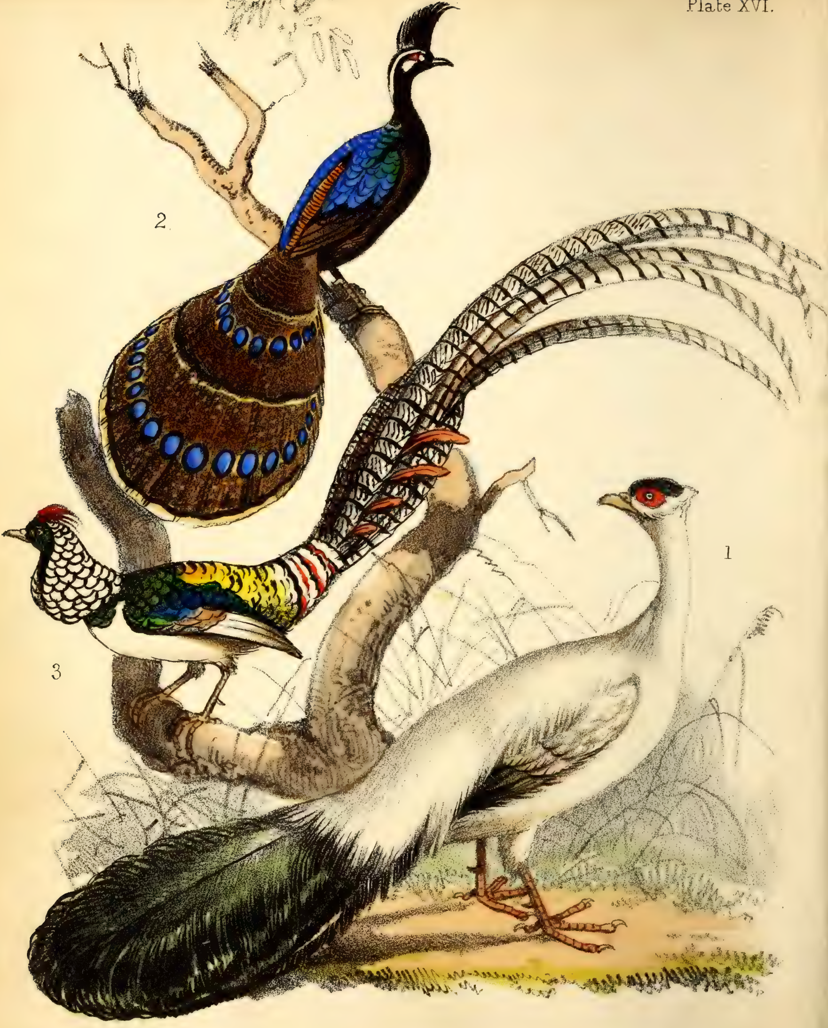

Bauerrichter & Cº lith.

1. Crossoptilon auritum. 2. Polyplectron Napoleonis. 3. Thaumalea Amherstiæ.

A POPULAR

HISTORY OF BIRDS,

COMPRISING

A FAMILIAR ACCOUNT OF THEIR CLASSIFICATION
AND HABITS.

BY

ADAM WHITE,

ASSISTANT, ZOOLOGICAL DEPARTMENT, BRITISH MUSEUM.

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TO

A. WHITE, Esq.,

NEWINGTON, EDINBURGH,

This Little Volume

ON THE

POPULAR HISTORY OF BIRDS

IS GRATEFULLY AND AFFECTIONATELY INSCRIBED

BY

HIS NEPHEW.

PREFACE.

THE system of classification followed in this little book is that of Mr. G. R. Gray, in his great and invaluable work, 'The Genera of Birds.' To have given, even in the briefest manner, the distinguishing characters of the numerous families and sub-families into which the extensive class of Birds is divided, would have taken up nearly all the space of the Work. Accordingly, this part of the subject, as in the previous volume on Mammalia, is treated very succinctly, while the space is occupied with interesting details on the habits of the various groups, compiled chiefly from the works of recent observers. In Ray's 'Wisdom of God manifested in the Works of the Creation,' published about a century and a half ago, the author estimated the number of Birds, known and described up to his time, as nearly five hundred; he supposed that about a third more might exist yet undiscovered. In the last edition of the 'Systema Naturæ' Linnæus gives the characters of nearly nine hundred and fifty species. At the present time between six and seven thousand species of Birds are known in collections, and the number is every year gradually increasing, as the unvisited parts of South America, Africa, Asia, and the Eastern Isles are being searched.

In Mr. G. R. Gray's 'Catalogue of the Genera and Sub-genera of Birds contained in the British Museum,' published in 1855, there are upwards of 2400 Genera and Sub-genera recorded. Those who have not seen the noble and well-arranged gallery of which this Work is a slight conspectus, may form some idea of its richness by seeing how few of the genera are marked as being desiderata to the collection at the time of the publication of the Catalogue.

London, November 1*st*, 1855.

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POPULAR

HISTORY OF BIRDS.

INTRODUCTION.

Birds are among the most attractive of creatures; few of them are absolutely repulsive. There is something peculiarly clean and pleasing about their feathers; and the generally oval shape of their body has for the most part an elegant outline, comprehended at a glance. They are in most cases equally at home in the air and on the ground, and many of them too can swim and dive, as well as fly and walk.

Birds are produced, in every case, from eggs with a hard calcareous covering; these eggs, pleasing in form and colour, are most generally laid in a nest, brought together and fabricated by the parent birds, often with great ingenuity. With few exceptions the eggs are sedulously hatched by the female, who is sometimes fed by her mate as she sits on the nest.

The young bird has a horny point on the tip of the beak, which assists it in breaking the shell; this falls off a few days after exclusion.

The number of eggs, laid by the various families of birds, varies much; most of the water-birds lay but one egg at a time, while the gallinaceous tribes, which supply so much food to mankind, lay the greatest quantity,—some, like our domestic fowl, continuing to lay many eggs, provided they are taken away.

In birds the respiratory system is particularly perfect. Dr. Kaup* thus sums up their characteristics in this respect:—"In this class there exists, without any exception, an open ear, which is fitted to receive melodious sounds, and to repeat them by a particular muscular apparatus on the lower larynx. In all birds moreover, some bones even take part in the respiration; in many birds we find oxygen to be conducted through air-sacks, even into the intestines, in order to bathe them in that element of bird life. No class consumes a greater quantity of oxygen than that of birds; two sparrows, for instance, inhale more of it than a rabbit, which weighs many times more than they. Their lungs and blood are therefore of a lighter red colour, and their blood is some degrees warmer than that of the mammalia. Their pulse beats on that account more forcibly, and is rather like that of a feverish mammal. The greater number of them have a loud and, in proportion to their size, an enormous voice, which they make frequent use of in gladness and sorrow. As a whole, birds may be called rather small than large, rather light than heavy. The greater number of them are active, swift fliers, mounting high into their element, the air. In this class, we see the wings developed in length at the cost of the feet. The muscles of the breast are in most of them enormous; in like manner is the crest of the sternum, on which the muscles are attached. In this class we first observe the most artful construction of nests, and the most melodious sounds of voice. Birds are, according to Oken, *Ear-breast*—and by my researches, *Respiration—Animals.*"

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* 'Contributions to Ornithology,' for 1849, by Sir William Jardine, pp. 102, 103.

All birds agree in having two feet, two wings, a bill, and a body covered with feathers. These characters equally apply to the class, from the diminutive humming-bird to the gigantic ostrich. In some of them, as in the apteryx, the wings are but slightly developed; and in others, as the penguin, where they are more considerable, the wings cannot be used as organs of flight, but are of great use to the birds in the water, where they serve like oars to propel them. Many birds, besides using the wings to fly with, employ them in striking their prey; and some are armed on the shoulder with a spine or spur, which serves as an offensive weapon.

The feathers are arranged in regular order in the skin, and are thrown off and again renewed once or twice a year. This moulting generally takes place in the autumn; most young birds, before this change, have the feathers of a different colour, while many species, in their adult state, in the autumn and winter have a different-coloured plumage, to what they wear in spring and summer. The males of many birds acquire in the spring, at the breeding season, an additional brilliancy to their plumage; the poet Tennyson alludes to this in his 'Locksley Hall':—

> "In the spring a fuller crimson comes upon the robin's breast;
> In the spring the wanton lapwing gets himself another crest;
> In the spring a livelier iris changes on the burnish'd dove."

The feathers, when cut or otherwise injured, are never restored; in this respect they differ considerably from the corresponding covering of the mammalia.

The strongest feathers are the quill-feathers of the wings and tail. These feathers, when expanded, form broad fans, by which the bird can raise itself in the air and fly. The proportional length of these quills is an important circumstance in the history of the bird, the power of its flight depending on their form, stiffness, and relative length. The bones of birds are very light compared with those of mammalia, and are thus well adapted for creatures fitted to move in an element where all unnecessary weight would be a great impediment. James Montgomery, in his 'Pelican Island,' speaking of the large pelican, pleasingly alludes to this:

> "Their slender skeletons . . . .
> So delicately framed, and half transparent,
> That I have marvell'd how a bird so noble,
> When in his full magnificent attire,
> With pinions wider than the king of vultures,
> And down elastic, thicker than the swan's,
> Should leave so small a cage of ribs to mark
> Where vigorous life had dwelt a hundred years."

Female birds are, with very few exceptions, much more sombre than the males. Wilson, in his 'American Ornithology,' has given an excellent reason for this: he says, "It is worthy of remark, that the females of almost all our splendid feathered birds are drest in plain and often obscure colours, as if Providence meant to favour their personal concealment, and consequently that of their nest and young, from the depredations of birds of prey; while among the latter, such as eagles, owls, hawks, etc., which are under no such apprehension, the females are uniformly covered with richer-coloured plumage than the males*."

Among exotic birds the toucans are a notable exception to this rule; among British birds may be specified the goldfinch, the female of which is scarcely less bright than the male. The first plumage of the males of gaily-coloured birds is generally of the same sober hue as the female; in the toucans the young birds are nearly as gay in colour as their parents.

The males of many birds, especially of the order *Passeres*, are possessed of the power of song, which, in many cases, certainly serves to enliven the female when on the nest. This however does not seem to be its only use, as the males of many birds sing also at times of the year when their partners are not engaged in the task of incubation. On this subject we may quote the words of Mr. Waterton†:—"I sometimes peevishly ask myself, why should nature have made a provision in the male blackbird, in order that he may soothe his incubating female, and have denied that provision to my favourite the carrion crow? and then I answer my own question by whispering to myself, that the she-carrion may possibly experience wonderful delight in listening to the hoarse croaking of her partner. . . . In a word, I know nothing, absolutely nothing, about the song in birds. The raven will whistle you a tune so true and pleasing, that you feel quite enchanted with his performance; while his congener, the carrion crow, notwithstanding all your pains to instruct him, will remain unmusical. . . . We listen with delight to the many species of male birds which make the groves resound with their melody; and we cannot imagine why the females so seldom venture an attempt at song; for we know that with us both ladies and gentlemen are full of fine sounds. Wherever a Braham is heard, there is sure to be a Billington not far off."

---

* Amer. Ornith. vol. ii. p. 233.

† Essays on Natural History, p. 252.

The activity of birds when they have young is most surprising. Dr. Macgillivray* records the observations made by a friend on a pair of blue titmice when rearing their young. The parent birds began their labour of love at half-past three o'clock in the morning, and did not leave off till after eight o'clock in the evening, after being almost incessantly engaged for nearly seventeen hours. Mr. Weir counted their various returns to the nest, and found them to be 475. Up to four o'clock, as a breakfast, they were fed twelve times; between five and six, forty times, flying to and from a plantation more than one hundred and fifty yards from their nest; between nine and ten o'clock, they fed them forty-six times, and they continued at their work till the time specified, sometimes bringing in a single large caterpillar, and at other times two or three small ones. The number of destructive insects removed by birds when feeding their young must be astonishing, if they are in any degree as active as the two blue titmice so patiently observed by Mr. Weir on the fourth of July, 1837. Great as the number of returns to the nest seems to be, it certainly does not exceed that of the common window swallow.

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* History of British Birds, indigenous and migratory, vol. ii. p. 438.

Birds are divided into various orders, families, and tribes, the characters being chiefly derived from the beak and feet.

Order ACCIPITRES. Birds of Prey.

By most naturalists the birds of this order are placed first in the classification. They are all carnivorous; and to enable them to obtain their prey, the beak and claws are strong and crooked; the upper mandible of the beak is much longer than the under, over which it is bent, being hooked at the end and sharp; the legs are, in the greater number of the species, of moderate length, but of great strength, the muscles which move the toes and claws being well developed; the toes are four, armed with long bent claws, those of the hind toe and the innermost being the strongest; the scales on the underside are rough, which gives the foot a more tenacious grasp. The females of the birds of prey are always larger than the males. The wings are long and powerful, and enable some of the species to soar to an immense height. They are generally solitary birds, or live in pairs, and construct their nests in inaccessible rocks or lofty trees; the young when hatched have their eyes closed, and require the close attention of their parents for a considerable period. The *Accipitres* are divided into two great groups, Diurnal

Birds of Prey and Nocturnal; the former, as the name implies, pursuing their prey by day, the latter for the most part by night.

The *Diurnal Birds of Prey* have the eyes placed on the side of the head. The head and neck are well proportioned. There are three toes in front, the outer being generally connected to the middle toe by a short membrane.

The birds of this group are divided into two great families, VULTURIDÆ and FALCONIDÆ.

The family VULTURIDÆ contains birds for the most part inhabiting the warmer parts of the world, and furnished with a smallish head and a long neck, which in most of the species are free from feathers; the eye is even with the head, a character which gives the vultures a tame look, compared with the birds of the next family. The tarsi are covered with small scales; the beak is lengthened, and is more used in procuring the prey than their talons, which are comparatively weak. The wings are very long, so that most of the species are powerful in flight, and can soar to great heights. The sight is peculiarly keen, and is supposed to be the chief sense employed in leading them to their prey, though it is also evident that their nostrils are good guides. Their food consists chiefly of carrion, the birds themselves not being endued with that courage which prompts most of the accipitrine birds to attack a living prey.

The Læmmergeyer (*Gypaëtus barbatus*) belongs to this family, and seems to form a link connecting it with the *Falconidæ*. The head, unlike that of the more typical vultures, is covered with feathers, the beak is strong, straight, much hooked at the point, while the nostrils, much as in the owls, are covered with stiff hairs directed forwards; the specific name is derived from a beard of hairs under the beak. This species inhabits the Alps and other lofty ranges of mountains in Europe and Asia, and is said to pursue goats, chamois, and other animals to the extremity of a precipice, over which they fall and are killed, when they become its prey.

"Wherever the carcase is," in tropical climates, "the vultures are gathered together." How descriptively is this alluded to in Holy Writ! How vividly is it more than once sculptured and depicted on the slabs, brought by Layard from the mounds which once constituted Nineveh! true "vestiges of creation." On these slabs, birds, fishes, quadrupeds, and even reptiles, are figured with all but specific exactitude, and often represented, as in the case of the vulture, in the exercise of their instincts. On one slab there is a very excellent figure of "Pharaoh's vulture" (*Neophron percnopterus*), a common species in Egypt, Syria, and Assyria, stooping over a fallen man, and engaged in pulling at his entrails; its attitude and whole manner show that the artist had closely observed nature. True to the carcase-loving propensities of the race in the East, we find from the pages of Alexander Wilson, the American ornithologist, Charles Waterton, the pleasant wanderer in Demerara, and Charles Darwin, the no less delightful recorder of his travelling observations, that the vultures of the New World have the same habit. Darwin records that, when lying in meditative repose on the Pampas, pretending to sleep, he has often seen the *Cathartes*, or black vulture of the country, hovering near him in flocks. Cowardly as these creatures are, they yet occasionally venture to attack dying animals too far gone to be able to resist them.

The presence of vultures and other carrion-feeding birds and creatures in tropical climates, is a great boon of the Almighty, for by their almost immediate presence, and generally in very considerable numbers, they take away what, if left to putrefy, might often produce a plague; and even what they leave, being broken up and dispersed, soon dries up and becomes innocuous. In some countries, for instance in parts of the West Indies, there have been laws enacted to prevent the wilful destruction of these useful birds, which act the part of scavengers, and, unlike those men, entail no tax on the inhabitants for the payment of weekly, monthly, or quarterly salaries. Waterton says, that in Paramaribo the laws protect the vulture ('Wanderings,' p. 210), and that the Spaniards of Angustura never think of interfering with them. This naturalist, in 1808, saw the vultures in that city parading the streets like fowls, and one unaccustomed to the sight, might have taken them for turkeys. But for these scavengers, the refuse of the slaughter-houses in Angustura would have proved an intolerable nuisance, and might have been pestilential to the inhabitants. In a view of a South American city, given in Vaillant's Voyage of the 'Bonite,' the vultures in the streets, like officially installed scavengers, form to the spectator a striking feature, while to the passers-by their presence seems a matter of course.

The Condor vultures are peculiar to South America, and derive their scientific name *Sarcoramphus*, from the fleshy wattles attached to the membrane at the base of the beak. One of these, the Great Condor (*Sarcoramphus gryphus*, Pl. I. fig. 1), has been seen soaring high above the loftiest peak of the Andes; the male of this has a ruff of white feathers round the neck, which contrasts well with the dark plumage of the birds. Although a large bird, its size, courage, and powers are not by any means proportioned to its reputation, which is derived from the exaggerated accounts of early travellers. Its true history was first given by Humboldt, from personal observation. He ascertained its ordinary abode to be rocks, just below the limits of perpetual snow; from these it sweeps into the valleys and plains in search of food.

In this genus, and rendered conspicuous by the bright-coloured fleshy wattles at the base of his beak, as well as by his decidedly pleasantly-tinted plumage, is the *Sarcoramphus Papa*, or "King of the Vultures," a common enough species in South America, where his size, colour, and weight give him a decided pre-eminence over the black vultures, called *Cathartes*, or turkey buzzards. Although in size and in power of wing, and in "personal" adornment, superior to most of the family, "king" though he be, this Papa Vulture must doff his royalty in the presence of the condor of the Andes. Waterton tells us, speaking of "his majesty," that there is no doubt that, when the scent of the carcase has drawn together flocks of the common vulture, they all retire when "royalty" makes his appearance.

Whenever the vulture-monarch "has satisfied the cravings of his royal stomach with the choicest bits from the most stinking and corrupted parts, he generally retires to a neighbouring tree, and then the common vultures return in crowds to gobble down his leavings" (p. 146). So well observed a fact is this, that when one of the Indians of Demerara has learned a little English, and, on seeing the king, wishes to give you a proper notion of the bird, not knowing any person in Demerara higher than the official so named, he says, "There is the Governor of the carrion crows." Through all the Spanish Main the bird is called "Rey de Zamuros," or king of the vultures.

The turkey buzzard of America (*Cathartes aura*) is a small vulture, belonging to the genus *Cathartes*, which resembles the condors in the beak being long and provided with longitudinal oval nostrils, and differs from it in the absence of wattles at the base of the beak.

Mr. Wallace describes the black vultures as being sometimes rather hard-pressed for want of food, and as obliged sometimes to betake themselves to palm-fruits. On the banks of the Rio Negro he was not a little amused to see these scavengers run after the pigs the moment they were up, to secure their droppings. The pigs would sometimes turn round and take a run at the birds, who would quietly hop or fly away for a short distance, but immediately return to their avocations in following the pigs. Mr. Wallace describes them as entirely guided by sight, and not by smell, in seeking out their food, and gives some striking instances in proof*.

The FALCONIDÆ, or Falcon family, form the second and by far the larger division of the diurnal birds of prey. The head and neck are closely covered with feathers, and the eyebrows in nearly all the species project over the eye, a character which strikingly alters the physiognomy of the family. Although they can live on carrion, yet most of the group prefer living prey, which they capture and kill. The females are generally much larger than the males. Some of the birds belonging to the division *Falconinæ* are capable of being trained to pursue game, and to return to their keeper when called: in these species the beak has a sharp tooth on each side near the hook, and the second quill of the wing is the longest. The birds with these characters, from their being used in falconry, have been named Noble, while all the other falconidous birds of prey, including eagles, have been named Ignoble.

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* 'Travels on the Amazon and Rio Negro,' p. 182.

The Wedge-tailed Eagle (*Aquila fucosa*, Plate I. fig. 2) is perhaps one of the fiercest of the family. In the journals of Australian travellers this species is often alluded to. James Backhouse* gives an instance of a woman having been chased by one of these birds for some distance, and obliged to run to a house for shelter. He was told by the wife of a settler, that she one day was struck with the action of a horse in an enclosure, galloping rapidly backwards and forwards, chased by two eagles. The horse at length fell, when one of the birds pounced on its head; she then called for the assistance of some men, who drove away the ferocious birds. In Van Diemen's Land this species not unfrequently carries off living lambs, and is, in consequence of its ravages, much dreaded by the colonists.

There are two fine eagles common on the shores of the Mediterranean, the *Aquila fulva* and the *Aquila imperialis*, both well known to the ancients. Striking figures of these birds are occasionally given on Greek coins, and seem to be evident studies from the living bird. It was on one of these eagles that the poet Campbell wrote such fine lines at Oran†:—

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* Narrative of a Visit to the Australian Colonies, p. 153.

† 'The Dead Eagle,' written at Oran. Poetical works of Thomas Campbell, p. 308.

"Fall'n as he is, this king of birds still seems
Like royalty in ruins. Though his eyes
Are shut, that look undazzled on the sun,
He was the sultan of the sky, and earth
Paid tribute to his eyrie. It was perch'd
Higher than human conqueror ever built
His banner'd fort. Where Atlas' top looks o'er
Zahara's desert to the equator's line;
From thence the winged despot mark'd his prey,
Above th' encampments of the Bedouins, ere
Their watchfires were extinct, or camels knelt
To take their loads, or horsemen scour'd the plain;
And there he dried his feathers in the dawn,
Whilst yet the unwaken'd world was dark below.
There's such a charm in natural strength and power,
That human fancy has for ever paid
Poetic homage to the bird of Jove.
Hence, 'neath his image, Rome array'd her turms
And cohorts for the conquest of the world.
And figuring his flight, the mind is fill'd
With thoughts that mock the pride of wingless man.

. . . .

. . . . . He clove the adverse storm,
And cuff'd it with his wings. He stopp'd his flight
As easily as the Arab reins his steed,
And stood at pleasure 'neath Heaven's zenith, like
A lamp suspended from its azure dome.
Whilst underneath him the world's mountains lay
Like molehills, and her streams like lucid threads.
Then downward, faster than a falling star,
He near'd the earth, until his shape distinct

Was blackly shadow'd on the sunny ground;
And deeper terror hush'd the wilderness,
To hear his nearer whoop. Then up again
He soar'd and wheel'd. There was an air of scorn
In all his movements, whether he threw round
His crested head to look behind him; or
Lay vertical and sportively display'd
The inside whiteness of his wing declined,
In gyres and undulations full of grace,
An object beautifying Heaven itself."

Tennyson, in one of his fragments called 'The Eagle,' has, in six short lines, painted a graphic picture of the "king of birds."

"He clasps the crag with hooked hands;
Close to the sun in lonely lands,
Ring'd with the azure world, he stands.

The wrinkled sea beneath him crawls;
He watches from his mountain walls,
And like a thunderbolt he falls."

Alexander Wilson, in the 'American Ornithology,' has given an admirable description of the predatory habits of the White-headed Eagle (*Haliaëtus leucocephalus*), a species which has been adopted in the United States as the representative of that country, although Benjamin Franklin and other illustrious citizens have expressed a wish, that some nobler denizen of the American continent had been selected than "this bird of bad moral character, which does not get his living honestly. . . . Besides he is a rank coward; the little king-bird, not bigger than a sparrow, attacks him boldly, and drives him out of the district. He is therefore by no means a proper emblem for the brave and honest Cincinnati of America*." We extract part of Wilson's description: the "fish-hawk" alluded to, is the osprey (*Pandion Haliaëtus*): "Elevated on the high dead limb of some gigantic tree that commands a wide view of the neighbouring shore and ocean, he seems calmly to contemplate the motions of the various feathered tribes that pursue their busy avocations below; the snow-white gulls slowly winnowing the air; the busy tringæ coursing along the sands; trains of ducks streaming over the surface; silent and watchful cranes, intent and wading; clamorous crows; and all the winged multitudes that subsist by the bounty of this vast liquid magazine of nature. High over all these hovers one, whose action instantly arrests his whole attention. By his wide curvature of wing, and sudden suspension in air, he knows him to be the fish-hawk, settling over some devoted victim of the deep. His eye kindles at the sight, and, balancing himself with half-opened wings on the branch, he watches the result.

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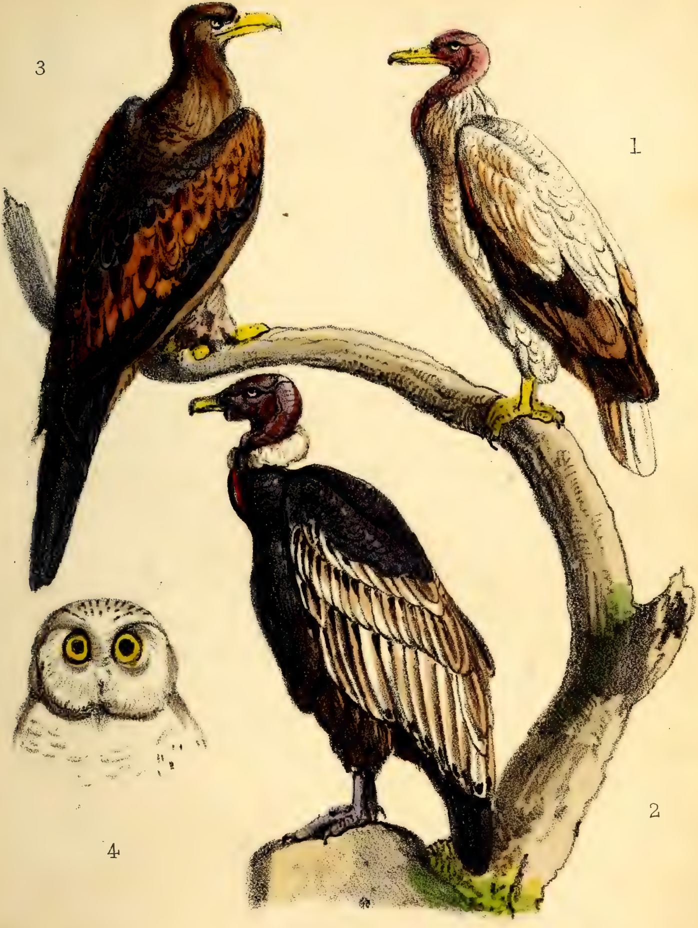
* Benjamin Franklin.



Bauerrichter & C° lith.

1. Neophron Percnopterus. 2. Sarcoramphus Gryphus. 3. Aquila fucosa.
4. Head of Snowy owl.

Down, rapid as an arrow from heaven, descends the distant object of his attention, the roar of its wings reaching the ear as it disappears in the deep, making the surges foam around! At this moment, the eager looks of the eagle are all ardour; and, levelling his neck for flight, he sees the fish-hawk once more emerge, struggling with his prey, and mounting in the air with screams of exultation. These are the signal for our hero, who, launching into the air, instantly gives chase, and soon gains on the fish-hawk; each exerts his utmost to mount above the other, displaying in these rencontres the most elegant and sublime aerial evolutions. The unencumbered eagle rapidly advances, and is just on the point of reaching his opponent, when, with a sudden scream, probably of despair and honest execration, the latter drops his fish; the eagle, poising himself for a moment, as if to take a more certain aim, descends like a whirlwind, snatches it in his grasp ere it reaches the water, and bears his ill-gotten booty silently away to the woods*."

With an account of an Asiatic eagle of large size, the *Nisaëtus grandis* of Hodgson, or large Hawk Eagle, a species with immense talons, as in the rest of its subgenus, we leave the subfamily of Eagles.

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* American Ornithology, vol. i. pp. 23, 24, (edition in 'Constable's Miscellany').

This bird, according to Mr. Jerdon*, is found in India, from the Himalayas to Cape Comorin, chiefly frequenting the wooded and jungly districts near mountain-ranges. It is much on the wing, sailing like most eagles at a great height, and seems to frequent certain spots, which it visits always about the same hour, its prey, doubtless, being most active at these times. This eagle seems to prefer hares, jungle-fowl, spur-fowl (*Francolinus*), and partridges, and even preys on peacocks. It has been known to strike down that large wading bird, the "douk" (*Tantalus leucocephalus*). The Indian falconers bear the bird a grudge, as most of them can tell of its having carried off a favourite hawk. Mr. Jerdon speaks of the depredations carried on by a pair of these eagles among pigeon-houses on the Neilgherries, which shows that they can work in concert, and are possessed of a large share of shrewdness. Whenever the pigeons took flight, one of the eagles pounces down from a vast height, directing its swoop rather under the flock than directly at them; its mate, like any fox, watches the confusion into which the pigeons are thrown, and flies rapidly at one of them; the other eagle makes another stoop, which is generally fatal.

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* Illustrations of Indian Ornithology, by T. C. Jerdon, Esq., Madras Medical Establishment. Madras, 1847.

The nest of the *Cuncuma leucogaster*, an Australian species, somewhat related to our Sea-eagle, is often of enormous dimensions. Captain Flinders found two built upon the ground, from which they rose above two feet; each nest was formed of branches of trees and other materials, enough to have filled a small cart. Mr. Gould* accounts for the accumulation of this large mass of materials, from the bird being in the habit of resorting to the same eyrie for many years in succession, and each year additional supplies of branches are used in reconstructing the nest.

The sport of falconry was a special pastime of "lord and lady gay" in ancient time, though at present all attempts to make it fashionable seem to be unsuccessful. In various parts of India hawking is still a much-loved pastime.

The favourite falcon of the East, Mr. Jerdon tells us, is the Shaheen (*Falco peregrinator*), a dark species whose Indian name means Royal Falcon. Many of these birds are annually caught and taken for sale to Hydrabad and other places where falconry is still pursued. It is trained for a "standing gait," that is to say, it is made to hover high in the air over the falconer and party, and from this height, when the game is started, it makes its swoop on the quarry with half-closed wing. In its wild state, it destroys partridges, quails, and paroquets*. Dr. Layard, in his second work on Assyria (c. 21), has given a highly interesting account of hawking, as pursued in the East. The Persians and Kurds are the great trainers of the *Chark* and *Shaheen* falcons.

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* Introduction to Birds of Australia, p. 18.

One species of the diurnal birds of prey has been turned to account by man, to get rid of noxious reptiles. This is the Secretary-bird of South Africa (*Gypogeranus serpentarius*), a long-legged bird, with feathers on its head, directed backwards, somewhat as pens behind clerks' ears used to look, in days when quills were employed. This bird is said not to molest poultry.

Among the European FALCONIDÆ there is one genus pre-eminently qualified, by its long wings and tail, for rapid flight, sudden turning, or calm soaring. This genus (*Milvus*) contains the Kite (*Milvus regalis*), called in Scotland and the north of England the Glead, which was its Saxon name, derived from the verb "glidan," to glide, in allusion to the sailing motion of the bird.

The species of two other genera (*Elanus, Nauclerus*) allied to our kite, (but differing from it in having very short tarsi, half-plumed,) are pre-eminently long-winged. America produces a fine species (*Nauclerus furcatus*), which is white and has black wings and tail. Wilson has described its habits, but we prefer extracting a note from the journal of Lieut. Abert, of the United States Topographical Engineers, and who accompanied Lieut. Emory, in 1846, on a warlike excursion from Fort Leavenworth to San Diego. "High above us, the swallow-tailed hawk (*Nauclerus furcatus*) was sweeping round in graceful circles, its white head glancing in the sunlight. I asked the Indian lad to shoot it for me with his rifle; but he gazed upwards at the bird, and seemed so struck with the beauty of its movements, that he uttered not a word, but shook his head, to signify that the bird was too fair for him to kill it. I should think it impossible for smaller birds ever to escape this hawk, which unites the form and swiftness of the swallow with the boldness and strength of wing of the falcon*."

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* Jerdon, Illustrations of Indian Ornithology, pl. xii.

Mr. Hodgson, long our Resident in Nepal, and so well known for his knowledge of natural history and the fine collection and drawings which he made, has published much on the birds and quadrupeds of India. In the 'Madras Journal' (vol. vi. p. 77) he informs us that the "Black-wing" (*Elanus melanopterus*), called *Chanwa* in Hindostan, is not migratory there. The birds of the genus breed on trees, and rear from three to four young. The *chanwa* generally searches for its food in the morning and evening, feeding on small birds, insects, and mice. This bird does not usually seize its prey on the wing, but skims like a harrier-hawk, occasionally poising itself on the wing, as if to get a distinct view; and when it has seen its quarry, the bird "stoops perpendicularly with the speed of lightning:" speed is very necessary in the case of mice, which "nimble game" constitute its chief food. Mr. Hodgson has frequently seen the *chanwa* whip off insects from stalks of standing grain, so that the Indian species resembles the North American species just referred to, in its 'swift'-like manner of life. The long wings, long tail, comparatively feeble feet, and other characters, present strong analogical resemblances.

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* Ex. Doc. no. 41, 30th Congress, p. 392. Washington, 1848.

There are some of the *Falconidæ* which are said to live chiefly on vegetable matter. The Ibycter in Guiana, according to Richard Schomburgk, feeds exclusively on the yellow berries of a *Malpighia;* in Brazil however the species feeds also, according to Spix, on grasshoppers.

The Honey-buzzards (*Pernis*) are, as the name implies, very fond of honey and wax. Dr. Kaup tells me, he has twice seen our British species (the *P. apivorus*) in Germany, with its crop filled with little black berries and leaves.

The Indian species (*Pernis cristata*) has been taken by Mr. Jerdon* with a large quantity of pure honey in its stomach; and its crop, when examined, is found to contain ants and wax. Mr. Jerdon mentions that he found in a specimen he dissected, a soft green mass, which looked like vegetable matter, but which was most likely the half-digested remains of green caterpillars.

The *Nocturnal birds of prey* form one large family, the Owls (Strigidæ), distinguished by their large head (Plate I. fig. 3), apparently increased in size by the long feathers which clothe it; their eyes also are very large, and directed forwards; the circle of fringed feathers which surround them, added to the size of the eyes, give the birds a peculiarly sagacious look, which has passed into a proverb. The large eyes collect at night every vestige of light, but, during the day, the pupils distend so much, that the excess of light dazzles and quite blinds them. The skull contains large cavities, communicating with the ears, which are supposed to assist their powers of hearing, every sense requiring its fullest development, to aid their nocturnal researches after food. The neck is short and covered with long feathers, the head appearing at times as if it was inserted on the body without that medium; the feathers are particularly soft and pliant, and furnished with a delicate down, so that when flying the owls scarcely make any noise, and can thus pounce unexpectedly on their prey. The American ornithologist, at the end of his description of the Hawk Owl (a bold and active species, which preys by day, and even follows the fowler that it may carry off the game when shot), says, "It is worthy of remark, that in all owls that fly by night, the exterior edges and sides of the wing-quills are slightly recurved, and end in fine hairs or points; by means of which the bird is enabled to pass through the air with the greatest silence,—a provision necessary for enabling it the better to surprise its prey. In the hawk-owl now before us, which flies by day, and to whom this contrivance would be of no consequence, it is accordingly omitted, or at least is scarcely observable. So judicious, so wise and perfectly applicable, are all the dispositions of the Creator*." The legs are generally covered with feathers; the outer toe can be directed backward or forward at the will of the bird, a structure which often gives

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* Madras Journal, vol. x. p. 73.

* Wilson, American Ornithology, vol. i. p. 92.

it a stronger grasp of the prey. This generally consists of small birds, which the owls surprise when roosting, or of the smaller mammalia, such as mice and bats; in general they swallow their prey entire, and, when the digestive process is complete, disgorge the feathers, hairs, and bones in the form of a ball. Their stomach is very muscular, but, unlike the diurnal birds of prey, which have a craw or expansion of the gullet, the gullet of the owls is of uniform diameter throughout. Most of the species are active at twilight and during the night, but a few, especially those with the head nearly smooth, are known to fly about woods by day, and even to pursue their prey at that time. Wilson, speaking of the Red Owl (*S. Asio*), and his description suits many of the family, says*: "Throughout the day it was all stillness and gravity; its eyelids half shut, its neck contracted, and its head shrunk seemingly into its body; but scarcely was the sun set, and twilight began to approach, when its eyes became full and sparkling, like two living globes of fire; it crouched on its perch, reconnoitred every object around with looks of eager fierceness; alighted and fed; stood on the meat with clenched talons, while it tore it in morsels with its bill; flew round the room with the silence of thought, and perching, moaned out its melancholy notes with many lively gesticulations, not at all accordant with the pitiful tone of its ditty, which reminded one of the shivering moanings of a half-frozen puppy."

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* Amer. Ornithology, vol. i. p. 100.

The poet Wordsworth, in one of his 'Evening Voluntaries*,' thus apostrophizes the owl, and alludes to its habits and history:—

> " Grave creature!—Whether, while the moon shines bright
> On thy wings open'd wide for smoothest flight,
> Thou art discover'd in a roofless tower,
> Rising from what may once have been a lady's bower,
> Or spied where thou sitt'st moping in thy mew
> At the dim centre of a churchyard yew;
> Or from a rifted crag or ivy tod
> Deep in a forest, thy secure abode,
> Thou giv'st, for pastime's sake, by shriek or shout,
> A puzzling notice of thy whereabout;—
> May the night never come, nor day be seen,
> When I shall scorn thy voice or mock thy mien!
> In classic ages men perceived a soul
> Of sapience in thy aspect, headless Owl!
> Thee Athens reverenced in the studious grove;
> And, near the golden sceptre grasp'd by Jove,
> His eagle's favourite perch, while round him sate
> The Gods revolving the degrees of Fate,
> Thou, too, wert present at Minerva's side;—
> Hark to that second larum! far and wide
> The elements have heard, and rock and cave replied."

One of the finest of the Owl family is the *Surnia nyctea,* or Snowy Owl, a species conspicuous from its size, power, and the light colour of its plumage. This species is occasionally met with in the Shetland Islands, occurring not unfrequently in Unst, one of the most northerly of them. In the northern parts of North America it is of frequent occurrence, and is there famed for its daring disposition when hungry. Mr. Rae has seen one of these birds fix its claws in a lap-dog when only a few yards distant from its master, nor would it let go its gripe till a gun was fired. That intrepid Arctic explorer mentions in his Narrative* an excellent method of shooting these birds, and one that he has often successfully practised; it "is to roll up a bit of fur or cloth about the shape and size of a mouse, and drag it after you with a line twenty yards long. The owl will soon perceive the decoy, although half a mile distant; and after moving his head backwards and forwards as if to make sure of his object, he takes wing, and making a short sweep in the rear of his intended prey, pounces upon and seizes it in his claws, affording the sportsman a fine opportunity of knocking him down." He goes on to tell us, that he has known as many as fifty of these birds to be killed in the early part of winter by one Indian.

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* Poetical Works, vol. v. p. 270, ed. 1841.

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* Narrative of an Expedition to the Shores of the Arctic Sea in 1846 and 1847, p. 26.

These people take advantage of the snowy owl's propensity to alight on elevated spots, and set up pieces of wood in the plains or marshes, with a trap fastened to the top.

Dr. Edmondston was the first naturalist who found this bird in the Shetland Islands; he observes that whatever may be its diurnal habits in North America, it does not prey by day in Shetland. It is there viewed as a bird of ill-omen, and as it is by no means shy, it owes its protection in great measure to the superstitious fear with which it is regarded. In Europe it makes its nest among steep rocks or on old fir-trees, while in the northern parts of America, according to Sir John Richardson, it nestles on the ground.

Order PASSERES. The INSESSORIAL BIRDS.

The birds of the order PASSERES are exceedingly varied in the form of their beaks. As Cuvier well remarks, the character of the order seems at first sight to be purely negative, containing as it does birds which are neither swimmers, waders, climbers, gallinaceous, nor rapacious.

In some of the families, such as the Butcher-birds, the beaks are nearly as much hooked as in the hawks, but the talons and cere of these birds are wanting. Many of the Passerine birds are insectivorous, others are omnivorous, while many live only on seeds and vegetable substances when adult, though the parents are careful to find for them in their young state such dainty morsels as grubs and insects in all their stages. Following the arrangement mentioned in the preface, we proceed to give an account of the habits of a few species belonging to some of the families.

The first division of this extensive order is distinguished from the others by the wide opening of the mouth, and by the short, broad, depressed beak, which is slightly hooked. This division, named *Fissirostres,* contains the Goatsuckers, Swallows, and Swifts, birds specially organized for taking insects on the wing.

It is a very hard matter to do away with any prejudice, especially when a name is in the way to prevent its removal. A whole race of birds has incurred the odium of milking cows and goats; and, so long-lived is the opinion, that it is at least as old as the time of the Latins, who named one of these birds "*Caprimulgus,*" from which is derived our no less stigmatic name "Goatsucker." Some kind-meaning naturalists have tried to call the birds night-jars, or night-swallows, but still *Caprimulgidæ* is the name of the family, and "goatsuckers" will be the name of any member of the group, where the English live. At night or towards dusk these birds are noticed occasionally to jump up at the udders of cows; they do this, not to illustrate their name, but to catch the flies or other insects which nestle there. These birds are scattered over the world, and many of them are familiar from their remarkable cries. The colouring of the goatsuckers is very sombre, but pleasing, consisting of an endless mixture of greys and browns running into each other. The tail and wings sometimes have white feathers, which help to decorate the rest of the plumage; the tail is occasionally very long. In one of Mr. Gould's works are given figures of some curious species with appendages to the wing and tail, which would almost look to be impediments to the bird. The large eyes, enormous gape, and, at first sight, the seemingly unformed head and weak legs, serve to distinguish these birds from any other. Their nocturnal habits are marked by their plumage, which is of that obscure complexion seldom found in day-flying birds.

The "Wanderer in Demerara" has described, in his usually attractive method, the cries of one or two of the species which there meet the ears of the traveller lying in his hammock. One species in particular, about the size of the English wood-owl, laments in a cry of such deep distress, that "he would say it was the departing voice of a midnight-murdered victim, or the last wailing of Niobe for her poor children before she was turned into stone. Suppose yourself in hopeless sorrow, begin with a high, loud note, and pronounce 'ha, ha, ha, ha, ha, ha!' each note lower and lower, till the last is scarcely heard, pausing a moment or two betwixt every note, and you will have some idea of the moaning of the largest goatsucker in Demerara.

"Four other species of the goatsucker articulate some words so distinctly, that they have received their names from the sentences they utter, and absolutely bewilder the stranger on his arrival in these parts. The most common one sits down close by your door, and flies, and alights three or four yards before you as you walk along the road, crying, 'Who-are-you? who-who-who-are-you?' Another bids you 'Work-away, work-work-work-away.' A third cries mournfully, 'Willy-come-go, willy-willy-willy-come-go;' and high up the country, a fourth tells you to 'Whip-poor-Will, whip-whip-whip-poor-Will*.'" The Ulama or Demon bird of Ceylon seems to be a bird of this group. Dr. Davy† refers to his hearing the loud and hideous screams of this species, which conveyed the idea of extreme distress. Its notes are deemed in the island to be ominous and a prelude to death or misfortune.

The goatsuckers are reckoned ominous birds in other parts of the world. Waterton‡ says that in Demerara no Negro will destroy them, and it is impossible to persuade an Indian to let fly his arrow at one of the tribe. The African thinks that Jumbo, the demon, or evil spirit of his country, has them ready at his beck; and the Indian of Demerara believes that the goatsuckers equally obey the orders of Yabahou, their evil spirit. "They are the receptacles for departed souls,

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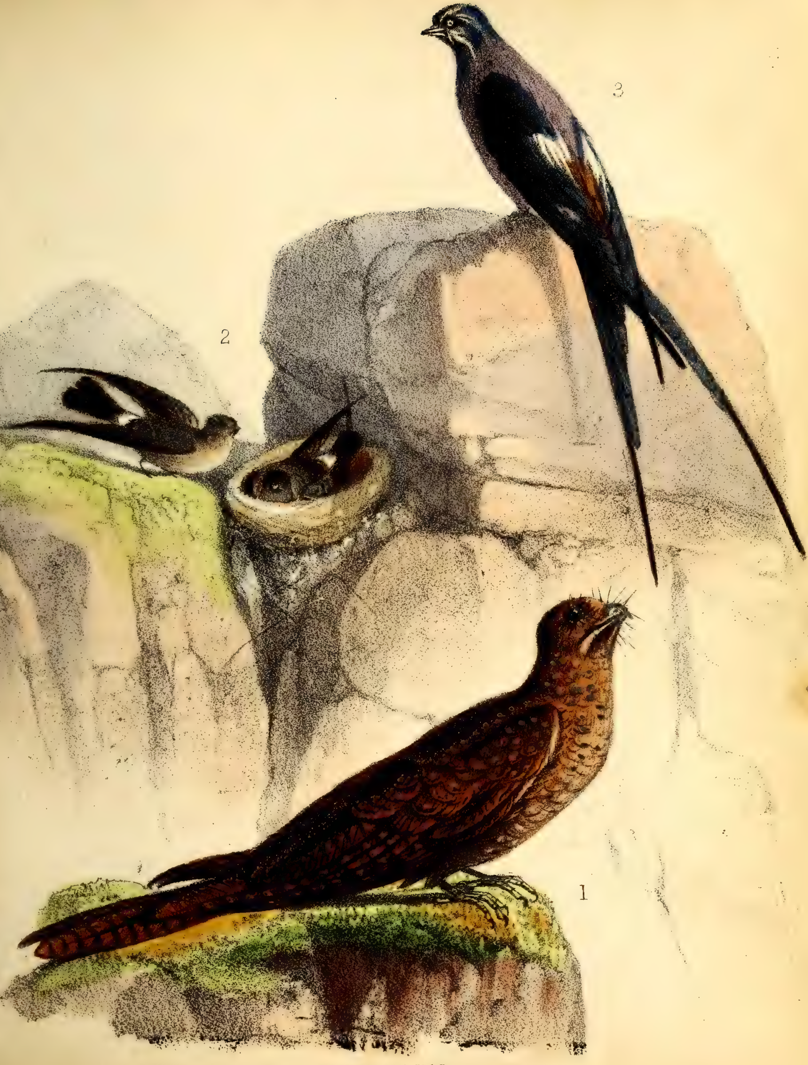
* Waterton: Wanderings, second journey, p. 141.

† Ceylon, p. 424. ‡ Wanderings, p. 142.

Plate II.



Bauerrichter & C^o. lith.

who come back again to earth, unable to rest for crimes done in their days of nature;" or they are sent expressly to haunt hard-hearted masters, and punish them for cruelty to their slaves. Should the large species cry near the door of the white man, evil must be at hand; and should the Indian's hut be visited by the sound, misfortune is deemed not far off. In Australia there are four species of a genus of this family, called *Podargus*. The beak is much stouter than in the other goatsuckers; there are no membranes between the toes, and the middle claw wants the curious pectinated appendage.

Mr. Gould has figured and described, in his great work on the birds of Australia, these four species; and from his account of one of them, the *P. humeralis*, the following passages are derived. This bird, like its congeners, i strictly nocturnal, sleeping during the day, in an upright position across the dead branch of a tree. So closely does it resemble in colour the object on which it is seated, that it requires a practised eye to distinguish the grey and brown mottled bird, from the brown and grey bark on which it rests. "So lethargic," says Mr. Gould, "are its slumbers that it is almost impossible to arouse it, and I have frequently shot one without disturbing its mate sitting close by; it may also be knocked off with sticks or stones, and sometimes it is even taken with the hand. When aroused, it flies lazily off with heavy flapping wings to a neighbouring tree, and again resumes its slumbers, till the approach of evening, when it becomes as animated and active as it had been previously dull and stupid." It does not seem, like many of the night-jars, adapted for extensive and easy flight, the wing being short and concave. Mr. Gould believes that a great part of its food consists of insects, which it finds resting on the boles of trees at night; he has taken one, the stomach of which was filled with *Phasmidæ* and *Cicadæ*, insects which, he says, never move at night. It has great power in shifting the position of the outer toe backwards, a circumstance which must give it considerable facility in creeping among trees. The male assists the female in the process of incubation; the nest is flat and slightly constructed of sticks placed in the fork of a horizontal branch of a gum-tree (*Eucalyptus*), apple-tree (*Angophora*), or swamp-oak (*Casuarina*).

A species of this genus was for some time in the Zoological Gardens, where its sleepy quietness, big depressed head, and large gape, with a dull sweep-like colouring, contrasted strangely with the restless activity, lively plumage, and noisy manners of the parrots around it.

Mr. Jerdon* says that the Hindustani name for the goatsuckers is *Chippuk, Dub-chooree,* and *Andhe-chooree,* each of them alluding to the habit of the species suddenly squatting close to the ground, as they do, when, on being disturbed in the day-time, they have flown from a short distance. In Teloogoo the goatsuckers are called *Kuppa-pitta,* or frog-bird, from their flat head, large eyes and mouth; and a name somewhat similar in meaning is sometimes applied to them in France (*crapaud volant*), though in this latter case the name "flying frog" is acquired rather by the dissonant notes which have given to the bird the name of "night-jar," and to which Wordsworth† alludes in 'The Waggoner.'

> "The dor-hawk, solitary bird,
> Round the dim crags on heavy pinions wheeling,
> With untired voice sings an unvaried tune;
> Those burring notes are all that can be heard
> In silence deeper far than that of deepest noon."

One of the most remarkable of the goatsuckers is the Guacharo (*Steatornis caripensis,* Pl. II. fig. 1), first described by Humboldt and Bonpland, from specimens which they took in a cave, at the foot of one of the peaks of the Cumana mountains called Guacharo. It is said that this bird lives chiefly on fruit, and about midsummer gets very fat. The Indians, as detailed in Humboldt's 'Personal Narrative,' at this time annually destroy thousands of the young birds, and having opened them, extract the fat, which they melt in clay vessels. This fat is semifluid and transparent, and keeps sweet for more than a year. The monks of the convent of Caripe use this fat in cookery; while the Indians regard the fruits, found in the crops of the young, as an excellent remedy against intermittent fevers.

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* Illustrations of Indian Ornithology, pl. 24.

† Poetical works, vol. i. p. 277.

Our British Goatsucker (*Caprimulgus Europæus*) is very regular in commencing his song at sunset. The Rev. Mr. Willmott says: "He never loses a minute; so that in a village, where, in still weather, the Portsmouth evening gun is often heard, the boom and the note intermingle. If a signal were given, the two sounds could not be more even*."

The Fissirostral birds, alluded to, are more or less exclusively night feeders. We now come to a section, the members of which are all actively engaged in seeking their insect food during the day.

All birds are equally well adapted by their organization, for the part they have to occupy in the system of nature, but in some this organization is more apparent to us. As an illustration we may take the Swift, a typical example of this section, and quote the excellent observations of the late Professor Macgillivray* on this bird:—

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* Journal of Summer-time in the Country, p. 194.

"If we suppose that the swift is destined to feed exclusively on insects as they flutter in the air, we can be at no loss to trace the reason of its peculiar form. Its body is light, but moderately stout, and its pectoral muscles are large, otherwise it could not move its wings with the necessary strength and rapidity. The wings are extremely elongated and narrow, because great rapidity of flight is required in the pursuit of animals which themselves fly with speed, and because sudden turns require to be executed in seizing them. A short, broad, concave wing, as that of a partridge, on being rapidly moved produces considerable rapidity, but is not fitted for either buoyant gliding or quick evolution. For the latter the surface of the wing must be extended in length and narrowed, and instead of presenting a concavity, must be straight in the horizontal direction. Accordingly in the swift the wing has its humeral articulation peculiarly free, insomuch that holding one alive in your hand you at first imagine that its wings have been broken. At the same time their muscular apparatus is remarkably strong. Then the secondary quills are very short, and the primaries gradually and rapidly elongated, and furnished with very strong but highly elastic shafts. The tail, although not so long, is similarly constructed, being deeply forked, and so in a manner divided into two pointed and elongated laminæ, similar in some degree to the wings, and aiding their action in executing turns. In seizing its prey, while gliding or fluttering in the air, the bird would be incommoded by any length of neck; that part therefore is extremely abbreviated, so that the head seems as if stuck upon the shoulders, as is the case for a similar reason in the *Cetacea* and fishes. A long pointed bill would be of use only to a bird that has objects to pick from the ground or any other surface, or from among soil or foliage. In the present case, the bird, carried with rapidity to its tiny prey, merely requires to open its mouth, which is extremely enlarged, and supplied with an abundant viscid secretion, which immediately entangles the fly that has been caught, and prevents its escape should the mouth be opened the next instant. A bird so living has no need of walking, and there being nothing superfluous in nature, its feet are reduced to cramping organs, by which it can cling to any kind of surface when entering its nest, and its gait is merely a hobbling motion, aided by the wings. It cannot rise from a flat surface, but it launches from any little eminence, and if it can spring out horizontally, is enabled to fly off, although its usual mode of launching is like that of the gannet, by a deep curve."

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* History of British Birds, vol. iii. p. 619.

Swallows are everywhere welcomed as harbingers of Spring. Which of us has not felt gladdened by the first sight of a swallow! The appearance of these aerial fairies is more indicative of the season even than a flower.

> "Spring *is* coming, thou art come,"

may be said of Wordsworth's celandine; but spring *has* come when the swallow is seen flying about, and is far advanced when the swallow has commenced to build. It is pleasing to find that a species, very similar to our *Hirundo rustica*, is welcomed by the colonists of South Australia and Van Diemen's Land as an indication of spring; Mr. Gould has applied to it in consequence the specific name *H. neoxena*[*]. In Van Diemen's Land it arrives about the middle or end of September, and in New South Wales a few stragglers remain during the whole winter. The natural breeding-places of this species are deep clefts in rocks and caverns, but Mr. Gould informs us that since the colonization of Australia, this species has, after the fashion of its European cousin, and as if aware of its friendliness to man, selected for its nests, the smoking chimney, the chambers of mills and outhouses, or the corners of the shady verandah. The nest is formed of mud or clay, mingled with grass or straw, and lined with a layer of fine grasses and then of feathers.

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[*] Birds of Australia.

Sir John Richardson* in July, 1826, remarked during his monotonous voyage in the Dolphin boat, among the uninteresting flats of the Mackenzie River, that he and his comrade were much pleased "by the busy flight and cheerful twittering of the sand-martins, which had scooped out thousands of nests in the banks of the river; and we witnessed with pleasure their activity in thinning the ranks of our most tormenting foes, the mosquitoes." Our own sand-martin has often struck us, as being singularly familiar and fearless of man, excavating, as it often does, its nests in banks, easily within reach. Such open confidence obtains for the most part general forbearance, just as the window swallow finds few, even of the churlishly disposed, who would molest its clay-built hanging dome in the corners of our windows, even though the scatterings on the panes of glass sometimes draw the attention, and we could wish them away.

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* Narrative of Captain Franklin's Second Journey to the Shores of the Polar Sea, p. 188.

Mr. Gosse has described, under the name of Palm Swift (*Tachornis phœnicobia*), a curious species indigenous to Jamaica. This bird forms its nest in the hollow spathes of the cocoa-nut tree; in some examined by Mr. Gosse there were three or four nests in a spathe, one above another and in contact: there was a kind of gallery communicating with each. The materials were feathers, and the silk cottony down of the *Bombax*, felted so strongly together as to be nearly as tenacious as cloth. He subsequently found similar nests attached to the plaited surface of the fronds of the palmetto; they were chiefly made of the cotton of the *Bombax*, and seemed to be firmly glued to the under surface of the leaves*.

There is a very small species of swallow (*Collocalia nidifica*) found in various parts of the Indian Archipelago which has acquired great celebrity from its nest. With the Chinese this nest is an important article of commerce; the chief supply is derived from Java, and, as the birds build generally in caves close to the sea and very difficult of access, great danger is often experienced in procuring them. In their texture they somewhat resemble isinglass, and are formed from a kind of seaweed called 'agal-agal,' after having been macecerated in the stomach of the bird. The nests are used in making soup, or rather in flavouring it: being high-priced, it is only a small part of the people who can command this luxury. The nests, mixed with spices, sometimes form the stuffing of a fowl, which, when stewed, is a favourite dish with Chinese gourmands. Mr. Adams says the bird is common on the rocky parts of the coast of Borneo, where he has seen it skimming "backwards and forwards all day long, uttering its little cheerful chirp as it eagerly pursues its insect prey*." He has taken the nests from the sides of shallow caves, where they adhere in numbers like so many watchpockets. The eggs are generally two in number; they are white and have a slight pinkish tint. The nests are either white, red, or black; the lighter-coloured fetch the best price in the market. The bird itself is of a light brown colour on the upper parts, the under parts and the tip of the tail are whitish.

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* Birds of Jamaica, p. 56.

Mr. Low assures us that more than one species of swallow construct these edible nests. He met with one peculiar to the limestone mountains of the interior of Borneo, which constructs a nest of a dusky colour, much inferior to the nest of the bird which builds on the sea-coast. To get at the nests of the latter, the dyaks of Borneo erect stages and frames of bamboo along the sides of the precipices leading to the caves; and when such structures, from the nature of the place, cannot be made, they are let down by rattans from the heights above*. When Mr. Low was in Borneo, four rupees a pound were given for the black kind of nests, which, from the feathers and other impurities mixed with them, are much inferior to the white kinds which sell for so high a price in China; such as they are, however, they form a source of considerable profit to the tribes inhabiting the limestone districts.

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* Voyage of Samarang, vol. ii. p. 435.

The family Coraciadæ contains the Rollers, bright-coloured birds with strong compressed beaks, which are found for the most part in India and the Indian Islands; the Todies of the western hemisphere, whose history is alluded to further on; the *Eurystominæ*, broad-billed birds, inhabitants for the most part of the Indian Islands (Plate III. fig. 1, *Eurystomus Javanicus*); and the Motmots. The chief food of the greater part of these birds consists of insects, which the rollers generally capture on the wing. Of this family only one species occasionally visits the British Islands; this is the Common Roller (*Coracias garrula*), a bird, according to Sir Charles Fellows, which is very common, in various parts of Asia Minor where the magpie does not occur. He remarks* that the roller is never seen in the same district with that bird, and observes that it falls through the air like a tumbler-pigeon.

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* Sarawak, its Inhabitants and Productions, pp. 317, 395.

The Todies form a genus of small birds, which are chiefly natives of the West Indian Islands; their beak is much flattened and blunt at the end. One of the best-known species is the Green Tody of Jamaica (*Todus viridis*, Plate III. fig. 3), the history of which has been recorded very pleasantly by Mr. Gosse in his 'Birds of Jamaica.' It is an abundant species there, and is very conspicuous from its bright green plumage and crimson breast; this latter peculiarity, coupled with its fearlessness or indifference to the presence of man, has acquired for it in Jamaica the familiar name of "Robin Redbreast." Unlike its European namesake, it is not met with on the ground, but keeps to the twigs of bushes, amongst which it hops, looking out for its insect food. It is very commonly seen, says Mr. Gosse, sitting patiently on a twig, "with the head drawn in, the beak pointing upwards, the loose plumage puffed out, when it appears much larger than it is. It certainly has an air of stupidity when thus seen; but this abstraction is more apparent than real; if we watch it, we shall see that the odd-looking grey eyes are glancing hither and thither, and that, ever and anon, the bird sallies out upon a short feeble flight, snaps at something in the air, and returns to his twig to swallow it. It is instructive to note by how various means the wisdom of God has ordained a given end to be attained. The swallow and the tody live on the same prey—insects on the wing; and the short, hollow, feeble wings of the latter are as effectual to him as the long and powerful pinions are to the swallow. He has no powers to employ in pursuing insects, but he waits till they come within his circumscribed range, and no less certainly secures his meal*."

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* Annals of Natural History, vol. iv. p. 213.

The tody, with its beak and feet, forms holes in banks of earth to the depth of eight inches or more. These holes are winding, and at the bottom is placed the nest, which is constructed of fibres and dry moss and cotton. Mr. Hill has given a detailed description of the digging habits of the tody, and informs us that the Spaniards of Hispaniola call the bird *Barrancali,* from the earthy ravine-cliffs in which it builds, *barranca* being the name applied to the deep breaks and gullies made by the mountain floods.

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* Birds of Jamaica, pp. 73, 74.

The family of the Trogons (TROGONIDÆ) contains birds peculiar to the warmer parts of the world, and distinguished generally for the elegance of their plumage. The bill is short and strong; the tip and the margins generally toothed; the tip somewhat hooked; the base furnished with bristles. The feet are small, and feathered nearly to the toes, which are more or less zygodactyle, the inner toe being reversed, and not the outer one, as generally happens in birds with this structure of foot. The wings are short, and the tail long and broad. M. Vaillant has described the habits of the *T. Narina*, a species peculiar to South Africa; this bird frequents the most retired parts of the forest, and during the heat of the day sits motionless on a branch; during the morning and evening it is active, and flies about in search of its food, which consists chiefly of insects, returning to its perch when it has captured them. The eggs are laid in the hole of a tree, which the parents enlarge by means of their bills. Mr. Natterer informed Mr. Gould, the well-known author of the Monograph of the family, that the South American species are solitary in their habits, though they occasionally congregate, impelled by their instinct to go in search of some locality where they can find a greater abundance of food. Mr. Swainson says, that the trogons sometimes feed on fruits, especially on the rich purple berries of the *Melastomaceæ;* and what is singular, he records that they invariably dart at them, as if, like insects, they could get out of their way. The skin of the trogons is very thin, and the feathers are very loosely attached. The most splendid of the species is the Quezal (*Calurus resplendens,* Pl. III. fig. 2), a native of Guatemala, the head of which is crested; several lance-shaped feathers, proceeding from the shoulder, hang over the wing; but, what particularly marks it, are several pairs of narrow, flowing plumes, which proceed from above the tail; the longest of these are sometimes upwards of three feet long. These feathers, with the back and throat, are of a brilliant golden green, while the breast, belly, and under tail-coverts are of a rich crimson. This bird was much prized in ancient times by the Mexicans, who regarded its long feathers as among the most handsome of their ornaments. The bird itself was sometimes carved on their monuments.

The trogons are found in the tropical parts of America, in some of the West Indian Islands, in the islands of the Eastern Seas, and in South Africa.

The family of the Kingfishers (ALCEDINIDÆ) is well represented by the group from which it derives its name, which are, generally speaking, birds of no great size, with a long, straight, angular, pointed beak, and a shortish tail. The food of the true kingfishers consists chiefly of small fish, which they watch for, on a branch overhanging a stream, and catch by precipitating themselves into the water, returning to their perch to eat their prey, as well as to kill it, which they do by beating it against the bough. Some species again, with very large bills, inhabit Australia, and are found in places remote from water. Mr. Gould, speaking of these birds, which belong to the genus *Dacelo,* says, "I believe that water is not essential to their existence, and that they seldom or never drink. They feed almost exclusively upon animal substances; small quadrupeds, birds, snakes, lizards, and insects of every kind being equally acceptable*." These birds, which are occasionally brought alive to this country, have a loud prolonged cry, somewhat resembling that of the ass; and from this cry have acquired their colonial name, "Laughing Jackass." Some of the small kingfishers feed almost exclusively on insects; and in some of the islands of the South Seas they are re-

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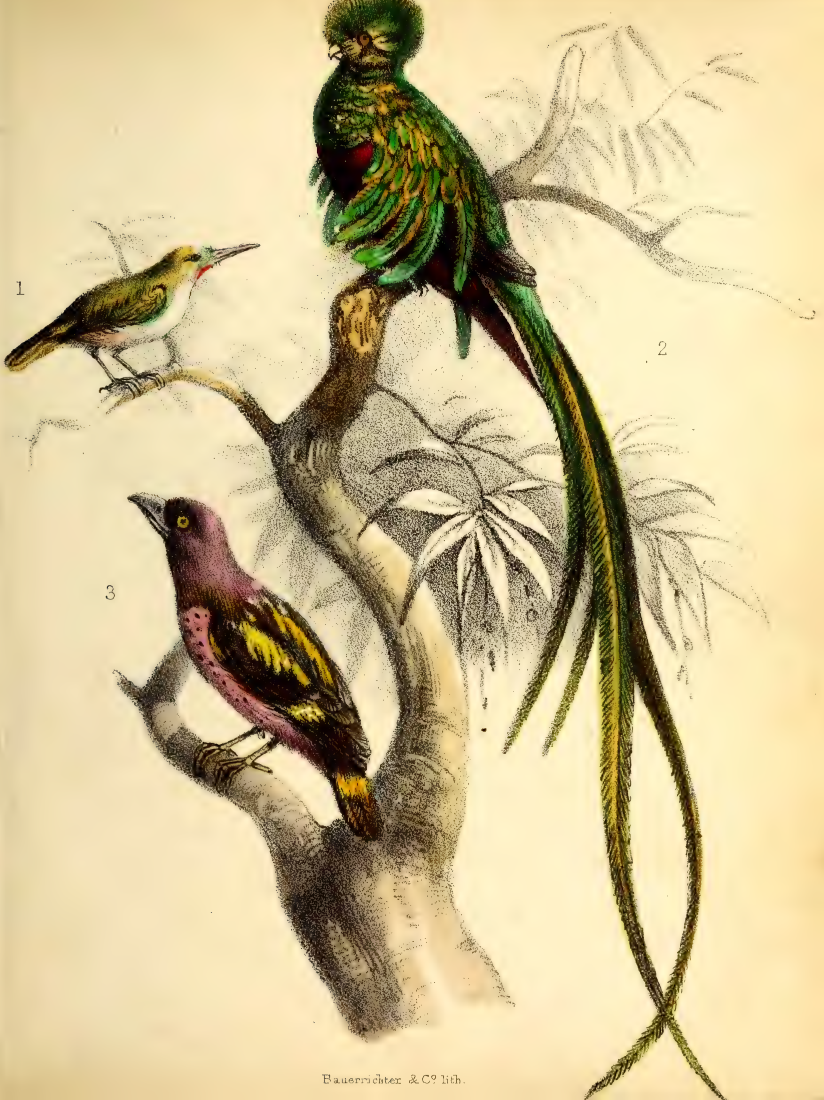
* Introduction to the Birds of Australia, p. 29.

Plate III.



Bauerrichter & C° lith.

garded as sacred birds, and severe penalties are exacted to prevent their being killed. None of the species are at all musical in their notes. Dr. Horsfield says, that the voice of the pretty little Javanese species may be heard as it flies along, but that its sharpness is unpleasant to the ear.

Although the kingfishers be pretty birds with their generally bright plumage, their large beaks and smallish bodies and tail give them, when at rest, a misshapen appearance, which is lost when they are seen flying, like coloured meteors, on the banks of some tree-shaded rivulet.

The form of the species of one genus of Kingfishers (*Tanysiptera*), even when at rest, is beautifully balanced by the tail, the two middle feathers of which are very long, and extend far beyond the others. The first known species of this genus is a native of New Guinea (*T. Dea,* Plate IV. fig. 1). A second lovely species, the sexes of which, as in most of the kingfishers, are similarly coloured, was found by Mr. Macgillivray on the voyage of H.M.S. Rattlesnake. By Mr. Gould it has been named the white-tailed Tanysiptera (*T. Sylvia*). This shy bird was found rather plentifully near Cape York, on the north coast of Australia. It seemed to be particularly fond of resorting to small sunny openings in the woods, to which it was chiefly attracted by the abundance of insects which flew about such places. The glancing of its bright colours as it darted past with rapid, arrow-like flight, soon attracted notice, contrasted with its disappearance in the shady woods to which this *Sylvia* retired. It perches on a bare branch or woody climber, and from this outlook makes short dashes at any passing insect or small lizard. The natives call it *Quatawur,* and say it lays three white eggs in a hole dug by itself in one of the large ant-hills, formed of red clay, which abound in the neighbourhood. Mr. M. believes the bird is found also in New Guinea.

One of the most brilliant-plumaged genera of South America is the Jacamar (*Galbula*), of which there are several species, all distinguished by their long sharp-pointed beak; the crest of the upper mandible is angular; the feet are formed as in the scansorial birds.

Their plumage is of a very changeable green, of all tints ranging between blue and golden yellow, and differs in the different species. Mr. Waterton* describes one species as fond of sitting in trees, the branches of which overhang the water. Its food exclusively consists of insects, and rapid though most of these little creatures be on the wing, the jacamar is sure of its prey; for, sitting on the branch with its keen eye on the look-out, as soon as butterfly or "wheeling beetle," or fly passes by, the jacamar darts at it, and having secured it returns to the branch, waiting again in motionless expectation.

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* Wanderings, p. 133.

Many of the brilliant birds appear to be unsocial, seemingly an unamiable trait in their manners, but doubtless there is design in it. Among these is the jacamar, for he shuns the society of other species of his class, and is, generally speaking, an indolent, sedentary bird. Mr. Waterton met with four species during his Demerara excursions; one of these is common in the dry savannas, while the largest species is found in the interior, where stones begin to appear in the ground. According to the Indians, one of the jacamars lays its eggs in the nests of the wood-ants so frequently seen on the trees in Guiana, where they look like large black balls (Wanderings, p. 282).

The birds of the family MEROPIDÆ, or the Bee-eaters, are for the most part brightly coloured, green being the predominant hue, but often prettily varied with red and yellow. The beak is long, and slightly bent, and sharp at the end. The wings are long and pointed; and in their flight, the birds, being dependent for their food on flying insects, make great use of them. The skin of the bee-eaters is particularly thick; a wise provision, since their favourite food consists of bees and wasps, which they seize with their bill and quickly put to death. Their feet are short, and the outer and inner toes are syndactylous, or connected together as far as the first joint. The bee-eaters abound in the warmer parts of the world; one species, the *M. Apiaster,* occasionally visits the British Islands. They make deep holes in banks, in which they deposit their eggs, which are white and spherical.

Mr. E. L. Layard writes (in his 'Rambles in Ceylon*') an account of the bee-eaters of Ceylon. He there records that he found the nest of the *Merops erythrocephalus,* in a steep bank; this was merely a hole dug into the clay about eighteen inches deep, and ending in a vaulted chamber. The eggs were two, pure white, rounded, and laid on the bare ground. The *Merops viridis* and *M. Philippinensis* are two other Cingalese species: the latter migrates. The *M. viridis* is gregarious; it roosts together in flocks of several hundreds. Several specimens of the *M. erythrocephalus* may be seen on the same tree, each occupying its separate throne, from which it darts off in chase of insects. Mr. Layard says that the *M. viridis* is the only species he has ever seen "actually perch *on the ground,* the *M. Philippinensis* generally selecting a pebble, be it ever so small. All the species have a pleasing note, particularly the *M. viridis* when selecting a roost for the night: this is generally a low tree or bush, to which they return night after night."

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* Ann. and Mag. Nat. Hist. 1853, p. 303.

The Motmots (*Prionites*) are American birds allied to the bee-eaters, but distinguished from them by many peculiarities, such as having the edges of the mandibles jagged, somewhat like a saw, while the tongue is feathered at the end. The tail is long and graduated. Dr. Cabot* thus refers to the black-throated motmot of Yucatan: "As one listens to it, and sees the bird perched on some branch in one of the dark deserted court-yards, with its head drawn in, its tail drooping, its plumage ruffled, and its large dark eye fixed upon him with a solemn still expression, he might imagine it to be animated by the spirit of one of the Maya priests, who had come there to mourn over the ruined temples and desecrated altars."

Mr. Swainson says, that the Brazilian species are very solitary, and only found in the deepest recesses of the forest, whence morning and evening the traveller hears their monotonous note. Their flying powers are feeble, their food consists of insects, and they are reported to pursue small birds, and pillage the nests of others of their young and eggs. They nestle in holes.

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* Boston Journal, vol. iv. p. 466.

These todies, kingfishers, bee-eaters, and motmots are arranged by Cuvier in a group (*Syndactyli*), which derives its name from the outer and middle toe of the birds composing it, being united as far as the second joint.

We now come to the *Tenuirostral* birds, which are distinguished for the most part by their slender and generally long curved bills, without any notch at the end.

If gorgeous plumage confer kingship on birds, the truly "magnificent" Rifle-bird (*Ptiloris magnifica*), *Epimachus paradiseus* of Gray and Mitchell's 'Genera of Birds,' may be regarded as a king of its family. The male of this long-beaked bird has a fine gorget of metallic-green feathers, terminating in a circlet of black, red, yellow and yellowish-green feathers, forming a crescent on his breast: his "cap" or head-covering is also, like the breast-gorge, of scale-like metallic-green feathers, the face being purplish, and shading off into the general black of the plumage. He contrasts finely with the sombre-coloured greyish-brown female, with its buffy-white under-part flecked with brown. This bird, formerly regarded as a native of New Guinea, was discovered also by that able naturalist Mr. Macgillivray during the voyage of H.M.S. Rattlesnake, at Cape York, in North Australia. He found it inhabiting the densest brushes. Its cry struck him, from its singularity. When imitated by man, the male bird will answer. He observed the old males generally on the tops of the highest trees, and if a female was near he would perch frequently "on a conspicuous dead twig, in a crouching attitude, rapidly closing and opening his wings; the feathers of which, by their peculiar form and texture, produce a loud rustling noise, which, in the comparative stillness of these solitudes, may be heard at the distance of a hundred yards*." He observed the male to be very shy compared with the female. His attractive plumage must make him easily visible. The natives of Cape York, who name this bird "Yagoonya," told our friend that it breeds in a hollow tree, and lays several white eggs. Another magnificent species, discovered by Mr. Macgillivray on the north-east coast of Australia, has been described by Mr. Gould, and named, after Her Gracious Majesty, the Victoria Rifle-bird (*Ptiloris Victoriæ*). Our figure of the male of this bird (Plate IV. fig. 2) shows the peculiarities mentioned by Mr. Gould*, its first describer,—"the purple of the breast presenting the appearance of a broad pectoral band, bounded above by the scale-like feathers of the throat, and below by the abdominal band of deep oil-green, and also by the broad and much lengthened flank feathers, which show very conspicuously." The Victoria rifle-bird was discovered by Mr. Macgillivray, when he was naturalist of H.M.S. Rattlesnake. On one of the Barnard Islands, on the north-east of Australia, he found it in considerable abundance. He tells us that the females and young males were common, but very shy. By sitting down and quietly watching them in some sheltered place, he found that one or more would alight on a limb or branch, and after running along it with great celerity, he saw them stop abruptly now and then, and thrust their beaks under the loose bark in search of insects, and then fly off suddenly. They are shy birds, and he observed occasionally one of them anxiously watching him from behind a branch, its head and neck only being visible. The adult males were rare and very solitary, concealing themselves from view in the thick bushes and masses of climbing plants.

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* Note furnished to Mr. Gould: 'Birds of Australia,' Supplement, part I. March, 1851.

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* Pro. Zool. Soc. 1849, p. 111, pl. 12; and Supplement to 'Birds of Australia,' pt. I.

Among the New Zealand birds there is a glossy black bird, with a white-tipped tail, which white colour, joined with the yellowish bill, and large wattle at its base, gives a variety and a contrast greater than would be suspected. In New Zealand this bird was at one time common, but its tail, like many other tails and appendages, excited the attention of warlike beaux of the Bay of Islands, who, on battle excursions and on other great occasions, adorned their hair with them, so that the "*Huia,*" or *Neomorpha Gouldii* (Plate IV. fig. 3), is now rather a scarce bird. Its beak is long, and curved into a semicircle, but is sometimes shorter: the natives regard the stout-billed as the male.

The Rev. W. Yates, in his 'Account of New Zealand' (p. 61), refers to this bird under its native name of Huia, and speaks of it as residing in deep, long grass; it feeds on worms and insects, and on a small berry called "ponga." Its flesh, he says, is delicious. Mr. Gould, in his 'Birds of Australia,' from communicated information says, that these fine birds are trapped by the natives, who imitate their shrill and long-continued whistle, and thus get them so near that they can kill them with their sticks. With their tails outspread and their wings thrown up, these birds must look singularly attractive.

The *Nectariniæ* somewhat resemble the Humming-birds in brilliancy of plumage. Dr. Burchell informs us that the Dutch Colonists at the Cape name them "suiker-vogels," or sugar-birds, from their food consisting chiefly of the honey they suck from the flowers of the "suiker-bosch," or sugar-bush (*Protea mellifera*). Mr. Pringle* says that in the interior parts of the colony, where this *Protea* does not grow, he has seen the *Nectariniæ* swarming in numbers nearly as numerous as a swarm of bees, about various flowering shrubs, and sucking the nectar with their long, sickle-shaped bills. He describes it as being a very attractive sight, their iridescent and brilliant colours outrivalling the blossoms among which they feed. One species (*N. chalybea*) sings delightfully, and has a clear melodious note.

The various species of Sun-birds (*Cinnyris*) have a long, slender, finely-serrated beak. The males alone, during the pairing season, assume those brilliant hues which have given them their English name; the males in the winter, and the females at all times, are very soberly coloured. Mr. Arthur Adams† thus refers to these birds: he says, "At Singapore I first had the pleasure of seeing these tiny paragons of the East, which are ethereal, gay, and sprightly in their motions, flitting briskly from flower to flower, and assuming a thousand lively and agreeable attitudes. As the sunbeams glitter on their bodies, they sparkle like so many precious stones, and exhibit as they turn a variety of bright and iridescent hues. As they hover round the honey-laden blossoms, they vibrate rapidly their tiny pinions, producing in the air a slight whirring sound, but not so loud as the humming noise produced by the wings of the *Trochilidæ*. Occasionally, I have seen them cling by their feet and tail, busily engaged in rifling of their insects and nectar the blossoms of the trees; in the stomachs of many which I examined were the partially-digested remains of dipterous, coleopterous, and tetrapterous insects. . . . I well remember a certain dark-leaved tree, with scarlet tubular flowers, that especially courted the attention of the sun-birds, and about its blossoms they continually darted with eager and vivacious movements. . . . The sun-birds seemed particularly delighted, clinging to the slender twigs, and coquetting with the flowers, thrusting in their slender beaks, and probing with their brush-like tongues for insects and nectar, hanging suspended by their feet, throwing back their little glossy heads, chasing each other on giddy wing, and flirting and twittering, the gayest of the gay. Some were emerald-green, some vivid violet, and others yellow, with a crimson wing." Some of the species are said to sing very sweetly.

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* Notes to Poetical Works, p. 81.

† Belcher's Voyage of H.M.S. Samarang, vol. ii. p. 387.

The birds of the genus *Cinnyris* were at one time thought to be particularly fond of sugar, and the various honeyed fluids found in the cups and tubes of flowers. Dr. Andrew Smith*, who long observed the species found in South Africa, remarks that insects seem to form their chief food. He examined the stomachs of several species, and found that the bulk of the contents of their stomachs consisted of insects, sometimes of considerable size; at the same time, there was more or less of a saccharine juice along with the animal matters. He well remarks that the birds could not easily avoid swallowing a certain portion of honey, from their mode of inserting their bills into flowers; but from the size and numbers of the insects, unless their consumption was an object of importance, he judged that if disagreeable to the bird, they could easily avoid swallowing them.

Had America been discovered before Dutch enterprise brought the productions of the Eastern Islands to Europe, Humming birds (TROCHILIDÆ) would have been named "Birds of Paradise," and the curiously-plumed creatures, now so named, would have had some other appellation. Buffon and Mulsant, from travellers' reports and specimens,—Waterton, Gosse, and Bourcier, from personal observation of living birds in their native haunts,—all dwell with rapture on these gorgeous jewels of the bird-creation. Like jewels they are small, like precious stones they are brilliant, and like gems they are scattered over America. Gosse describes* with glee the Red-throated Humming-bird, which visits even cold Canada in its warm summer; while amongst the sleets of gloomy Patagonia, near the dismal Magellan's Straits, in a climate that would seem likely to appal anything less hardy than the "albatross" of the Ancient Mariner's rhyme, Captains King and Fitzroy have seen a humming-bird flying about. Pages might be extracted from the leaves of travellers' journals, in praise of these "winged gems of nature," each extract fuller than the other of ecstasy. For one instance, take Charles Waterton:—"See it darting through the air almost as quick as thought!—now it is within a yard of your face!—in an instant gone! now it flutters from flower to flower, to sip the silver dew—it is now a ruby—now a topaz—now an emerald—now all burnished gold†!"

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* Illustrations of the Zoology of South Africa, pl. lvii. (*Cinnyris Verroxi.*)

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* The Canadian Naturalist.

† Wanderings, p. 114.

Well may the poet ask,

> "Art thou a bird, or bee, or butterfly?"

and no less fitly might the answer be,

> "Each and all three;—a bird in shape am I,
> A bee collecting sweets from bloom to bloom,
> A butterfly in brilliancy of plume*."

The whole structure of these birds is adapted for flight: their feet are very small, their tail is large, their wings are very long and narrow, while the sternum is very large, and has no notch on its posterior margin; in most of these respects resembling the swifts, birds which they nearly approach in power of wing.

At one time it was supposed that these slender-beaked feathered gems fed exclusively on the honey of flowers. Although they are fond of the nectar of flowers, and in captivity delight in sugar, yet a great portion of their food would seem to consist of insects, which take refuge in the long tubes and other recesses of flowers. On opening the stomachs of humming-birds, insects are met with, and sometimes there are considerable numbers of them. Mr. Gosse has seen the long-tailed Humming-bird of Jamaica (*Trochilus polytmus*) catch insects on the wing. He says: "I was fully convinced

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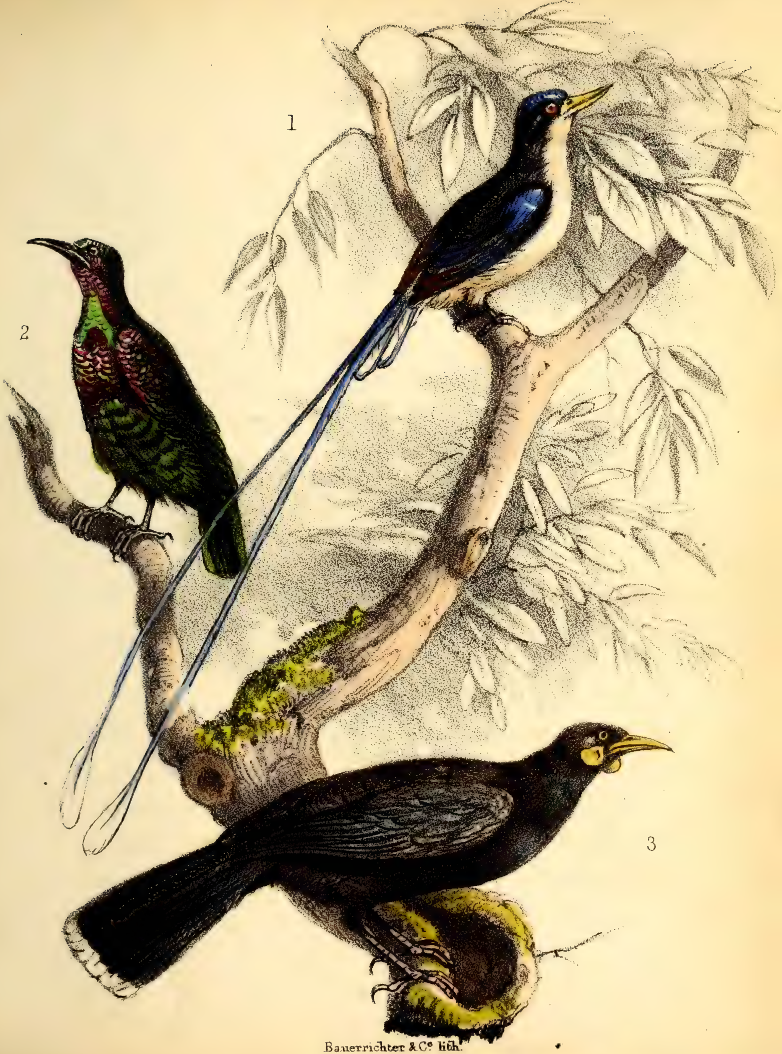
* James Montgomery, Poetical Works, iv. 135.



Bauerrichter & Co. lith.

1. Tanysiptera Dea. 2. Ptiloris Victoriæ. 3. Neomorpha Gouldii.

that the object of their incessant sallies on the wing was the capture of minute insects; so minute that they were generally undistinguishable to the human eye. Yet the action of the bird showed that something was pursued and taken; and though, from the extreme rapidity of their motions, I could not often see the capture, yet several times I did detect the snap of the beak, and once or twice witnessed the taking of some little fly, just large enough to be discerned in the air. Moreover, the flights were sometimes very short: a leap out upon the wing to the distance of a foot or two, and then a return to the perch, just as the true fly-catchers do; which indeed the humming-birds are, to all intents and purposes, and most accomplished ones. I judge that, on a low estimate, each captured on the wing at least three insects per minute, and that, with few intervals, incessantly, from dawn to dusk. Abroad I do not think quite so many would be taken in the air, the more normal way being, I presume, the securing of the minute creatures that inhabit the tubes of flowers; yet we perpetually see them hawking, even at liberty. My captives would occasionally fly to the walls, and pick from the spiders' webs with which they were draped*."

* Birds of Jamaica, pp. 122, 123.

Waterton in his 'Wanderings' alludes to two or three of the Demerara species. In July and August, they are particularly fond of fluttering about the red blossom of a richly flowering tree, called there "*bois immortel*"; around this and the "red sage," and the flowers of the "wallaba-tree," conspicuous ornaments of the woods, these species may be constantly seen, fluttering like so many bees. Our enthusiastic traveller thus describes a scene on entering the forests of the rising land, as you get into the interior:—"The blue and green, the smallest brown, no bigger than the humble-bee, with two long feathers in the tail, and the little forked-tail purple-throated humming-birds glitter before you, in ever-changing attitudes. One species alone never shows his beauty to the sun; and were it not for his lovely shining colours, you might almost be tempted to class him with the goatsuckers, on account of his habits. He is the largest of all the humming-birds, and is all red and changing gold-green, except the head, which is black. He has two long feathers in the tail, which cross each other, and these have gained him the name of Karabimiti, or Ara humming-bird, from the Indians. You never find him on the sea-coast, or where the river is salt, or in the heart of the forest, unless fresh water be there. He keeps close by the side of woody fresh-water rivers, and dark and lonely creeks. He leaves his retreat before sunrise, to feed on the insects over the water; he returns to it as soon as the sun's rays cause a glare of light, is sedentary all day long, and comes out again for a short time after sunset. He builds his nest on a twig over the water in the unfrequented creeks; it looks like tanned cow-leather"(pp. 114, 115). He tells us (p. 289) that the rim of this nest is doubled inwards, and that at first he believed that it had taken this shape from the bird pressing against it with her body when she was laying her eggs. He afterwards found out that a provident instinct has taught the little creature to give the nest this shape, and that in this way the eggs, which would be apt to be tilted out by the swaying of the branches, are prevented from rolling out.

The number of species of humming-birds is very great; on Plate V. are three species (fig. 1. *Oreotrochilus Chimborazensis;* fig. 2. *Oxypogon Guerinii;* fig. 3. *Trochilus mellivorus*). Since Messrs. Bourcier and Gould have recently commenced handsome monographs of them, species "unknown to science" are brought to our museums, especially from the more elevated parts of South America; for of the slopes of the Andes it may be more truly said than of any other part of that vast continent, that,

> "Half bird, half fly, the fairy king of flowers
> Reigns there, and revels through the fragrant hours,
> Gem, full of life and joy*."

Sir Woodbine Parish, the great authority on the provinces of the Rio de la Plata, and long the British Resident, notices in his book, that in the gardens around Buenos Ayres humming-birds abound. They frequent the sweet flowers and orange-trees growing there. He says: "We had a vast number of them always in ours. One with a brilliant violet-coloured breast was the most common. Many were the attempts we made to rear the young birds, but in vain; I believe, because we did not know their proper food. All we could do was to keep them in their own nests in cages for some weeks hung up in the trees in which they were taken, where the parent bird would continue to visit and to feed them, till they were supposed to be old enough to provide for themselves; then, nature's duty done, she invariably abandoned them, and they as surely died†."

Sir Woodbine Parish gives an instance of the possibility of taming a humming-bird, additional to one related by Azara. He tells us that the lady of General Balcarce, one of the Plata ministers, with whom he was well acquainted, had a humming-bird so completely trained to obey her, that she carried it about in her bosom when she visited her friends; she would then let it fly about the room, and even into the garden. Sir Woodbine has seen this bird flying in his own garden, and disporting itself from flower to flower "till recalled by the well-known voice of its mistress, to be returned to its resting-place and carried home again." It would be not over fanciful to hope, that we may yet live to see some of these "winged gems," fluttering about the gorgeous flowers which bloom and flourish so freely in the conservatories of our gentry, and in those paradisiacal botanical gardens at Kew and elsewhere, now so open to the public and so appreciated by them.

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* Rogers's Voyage of Columbus, p. 255.

† 'Buenos Ayres and the Provinces of the Rio de la Plata,' p. 109.

Australia is the home of a very extensive family of pretty birds called Honey-eaters (MELIPHAGIDÆ). They are found on the numerous flowering shrubs and trees, to which they resort for supplies of food. Although the sweet juices which are found in flowers form a part of their sustenance, yet insects seem to be the chief object of their search. They are all birds of great animation and of infinite restlessness, and many of them are famed in Australia for the melody of their song. The bill is sharp and pointed, and the nostrils, which are of considerable size, are covered by a cartilaginous scale. The tongue in most of the species ends in a pencil of hairs, the better to enable them to get at their food.

One species of this family, with long yellow wattles, like ear-drops, on the head behind the eye (*Anthochæra inauris*), is very abundant in Van Diemen's Land, and hundreds are annually shot and sent to Hobart Town market for the table. Mr. Gould says that it is highly prized as an article of food, and so much nutriment must it derive from the honey and pollen of the *Eucalypti*, its chief food, that in winter it becomes enveloped in fat; as much as a teacupful of oil may be obtained from two of these birds, and as the oil gives a better light, it is sometimes used in place of candles. The long tongue, with its brush-like tip, is well suited to aid it in procuring its food, which it gets in great profusion from the various species of *Eucalypti*, the newly-opened flowers of which "appear with every rising sun throughout the year." It must be a very animated sight to see thirty or forty of these birds on one tree, hanging and clinging to the branches in every possible variety of position, and displaying their long graduated tails, the feathers of which are tipped with white. The presence of another species of this genus, the Brush Wattle-bird (*Anthochæra mellivora*), is a sure indication to the colonist of barren ground; the bird being attached to Proteaceous shrubs of the genus *Banksia*, which only grow in the most sterile and unprofitable soils. These *Banksias* are in blossom during the greater part of the year, and as each flower expands, it is diligently examined by this honey-eater, which pushes its long feathery tongue into every part of the flower, from which it procures honey, pollen, and insects. The note of the male is particularly harsh and disagreeable, and somewhat resembles Goo-gwar-ruck, the not very euphonious name by which the natives of New South Wales know the species. To this family belongs the singular bald-headed Friar-bird of New South Wales (*Tropidorhynchus corniculatus*, Plate VI. fig. 1), which selects the topmost dead branch of a lofty tree, and from its conspicuous site, attracts attention by its loud call, resembling various words by which it is familiarly known, such as "Poor soldier," "Pimlico," "Four o' clock." It has also, from its bare head and neck, received the names of "Monk," "Leatherhead," and "Friar-bird." Its food consists of the pollen of gum-trees, insects, and also wild figs and berries. During the breeding season this species is particularly bold, and attacks hawks, crows, and other birds much larger than itself, when they venture near its nest, and it does not desist till it has succeeded in driving them away. Another gay species, robed in yellow and black, the Warty-faced Honey-eater (*Zanthomyza phrygia*), is also very pugnacious, limiting its attacks principally to smaller species of the same family which venture to come near its haunts. Mr. Gould speaks of two pairs which had possessed themselves of a high tree, left standing in Adelaide, when he was there, and which beat off every bird that offered to come near.

Another bird of this family, the *Myzantha garrula,* abundant in Van Diemen's Land, where it is called the "Miner," proves a great pest to the sportsmen from the warnings it gives to the objects for which he is searching, to get out of the way. Mr. Gould says that "no sooner does the hunter come within the precincts of its abode, than the whole troop assemble round him and perform the most grotesque actions, spreading out their wings and tail, hanging from the branches in every possible variety of position, and sometimes suspended by one leg, keeping up all the time one incessant babbling note. Were this only momentary or for a short time, their droll attitude and singular note would be rather amusing than otherwise, but when they follow you through the entire forest, leaping and flying from branch to branch, and almost buffeting the dogs, they become very troublesome and annoying, awakening as they do the suspicions of other animals of which you are in pursuit." The note of another species of *Myzantha* (the *M. melanophrys*) has acquired for it the name of the Bell-bird; companies of from ten to forty and even more "giving utterance to a peculiar garrulous note, which has been justly compared to the sound of distant sheep-bells, and which, when poured forth by a hundred throats from various parts of the forest, has a most singular effect."

The *Meliphaga Australasiana* is a species found abundantly among the almost impenetrable forests which cover great portions of Van Diemen's Land. Mr. Gould refers to the pleasure experienced by the traveller in listening to the loud shrill liquid notes poured forth by numbers of this species, and which break the extreme silence of the solitudes. It would appear to derive its chief supply of food from the thick beds of *Epacris impressa,* a shrub with red and white heath-like flowers, in the blossoms of which it finds abundance of food; so intently is it sometimes engaged in its search after this, that the ornithologist of Australia has been able to get so near it as to observe its actions without disturbing it. The bird then clings to the stems in every possible attitude, inserting its long brush-like tongue into every flower with great rapidity. It does not confine itself to the nectar and pollen of flowers, but feeds on insects, particularly of the orders *Diptera* and *Hymenoptera.* The nest is placed on a low shrub, within a foot or two of the ground. It is round and open, and is constructed of the inner rind of the stringy-bark gum-tree, while the inside is lined with fine grasses. Mr. Gould describes a species of *Meliphaga* from the Swan River, which captures insects precisely after the manner of the fly-catchers: it is named *Meliphaga mystacalis.*

To the family CERTHIDÆ belong the Oven-birds (*Furnarius*) of South America, which derive their name from the singular nest which they construct. Mr. Darwin* describes the habits of two species found in La Plata: the first of these is called by the Spaniards *Casara,* or the house-maker; it is the *Furnarius rufus* of naturalists; the nest of this bird is placed in the most exposed situations, the architect selecting the top of a post, a bare rock, or one of the prickly plants called *Cactus* for a foundation. The walls are strong and thick, and composed of mud held together by bits of straw; in shape it resembles an oven or flattened bee-hive. The opening is large and arched, while there is a passage or ante-chamber to the true nest formed by a partition nearly reaching to the roof. The second species described by Mr. Darwin is smaller than the other, which however it resembles in the reddish plumage, the shrill reiterated cry, and a peculiar manner of running by starts: by the Spaniards it is called *Casarita,* or the little house-maker. It constructs its nest at the bottom of a narrow cylindrical hole of considerable length; this hole is usually formed in a low bank of firm sandy soil, close to a road or stream. The casarita, according to Mr. Darwin, sometimes selects other situations. "At Bahia Blanca, the walls are built of hardened mud, and I noticed," says this traveller, "that one, which enclosed a courtyard where I lodged, was penetrated by round holes in a score of places. On asking the owner the cause of this, he bitterly complained of the little casarita, several of which I afterwards observed at work. It is rather curious that, although they were constantly flitting over the low wall, they must be quite incapable of gaining an idea of thickness, even after the shortest circuitous route, for otherwise they would not have made so many vain attempts. I do not doubt that each bird, as often as it came to daylight on the opposite side, was greatly surprised at the marvellous fact."

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* Journal, p. 112.

The Purple-winged Creeper (*Tichodroma phœnicoptera*) is found, according to Mr. Vigne*, throughout the whole of the alpine Panjab, where it strikes the eye of the observing traveller, as it displays the delicate scarlet patch upon its grey wings, when flitting over the perpendicular banks, with the movements of a butterfly rather than those of a bird. This species is occasionally also to be seen creeping on the walls of St. Peter's at Rome, but its true home appears to be the mountains of Spain and Italy, among the crevices and clefts of rocks, where it finds its food, which consists chiefly of insects and spiders.

In this family, but belonging to a distinct division of it, named by Mr. G. Gray *Orthonycinæ,* is placed the curious Australian *Orthonyx spinicaudus,* the beak of which somewhat resembles that of the thrushes, while the legs are slender, and have long straight claws, with which, by the observation of M. Verreaux, the bird scratches among the fallen leaves for its food, throwing back the earth much in the manner of the *Gallinacea.* The tail-feathers terminate in sharp points, the use of which in the economy of the bird is not very apparent, as it does not climb trees, being strictly terrestrial. Its chief food consists of insects and their grubs. The nest is a large domed one, formed of mosses, the entrance being by a hole at the side close to the bottom.

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* Travels in Kashmir, vol. ii. p. 21.

The genus *Pteroptochos* is peculiar to South America. Mr. Darwin describes the habits of two species which are common in Chili. One (*P. megapodius*) is called there 'el Turco': at first sight this bird has some resemblance to our fieldfare, its legs however are much longer, the tail is short and carried erect, and the beak is stronger; it lives on the ground and seeks shelter among the thickets. Darwin says it is an awkward-looking bird. In its stomach he found beetles, vegetable fibres, and pebbles. The second species (*P. albicollis*) is named in Chili 'Tapacolo,' from carrying its tail inclined backwards towards its head. It is a cunning bird. Mr. Darwin says: "When frightened by any person it will remain motionless at the bottom of a bush, and will then, after a little while, try with much address to crawl away on the opposite side. It is also an active bird, and continually making a noise; these noises are various and strangely odd; some are like the cooing of doves, others like the bubbling of water, and many defy all similes. The country-people say it changes its cry five times in the year*." Mr. Darwin, in his 'Journal,' also refers to the "Cheucau"

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* Journal, p. 330.

(*P. rubecula*), another species which he met with in gloomy and retired spots, among the damp forests of the island of Chiloe. He says that this little red-breasted bird is held in superstitious fear by the natives on account of its strange and varied cries. Of these there are three distinct kinds: one called "chiduco" is an omen of good, while another named "huitreu" is regarded as very unfavourable; he says that the natives are in some things absolutely governed by them*.

On the island of Chiloe is found a bird closely allied to the above, named by the English "the barking bird," from its notes having a striking resemblance to the yelping of a small dog; the natives call it "Guid-guid." It is the *Hylactes Tarnii* of Captain King.

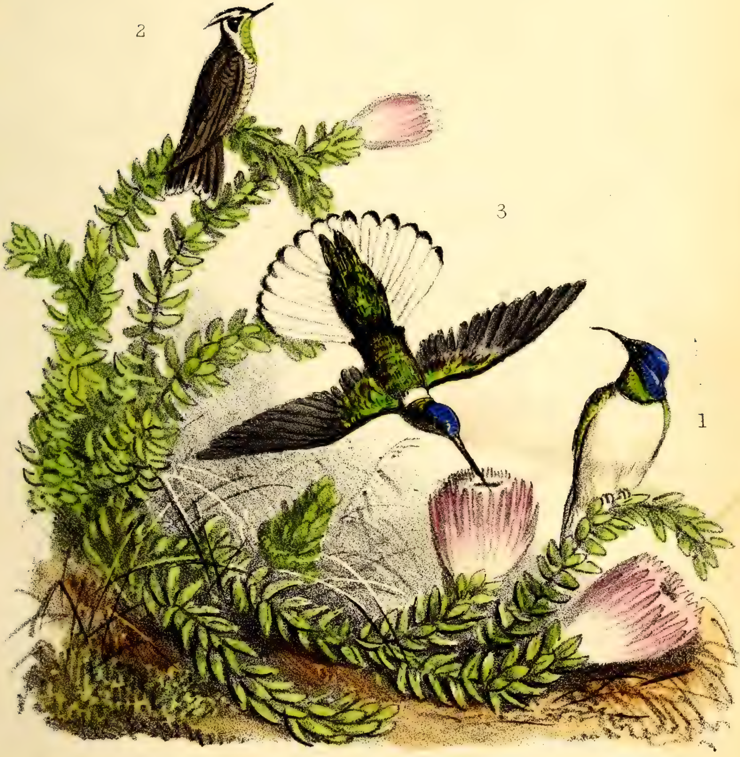
Among the song-birds smallness of size is all but universal. In that land of contrarieties however, called Australia, there is an exception to this rule, in the case of one of its best-known birds, and one which Mr. Gould has well selected as an emblem for his truly magnificent work 'The Birds of Australia.' At one time, and even occasionally now, this bird, which is at least as large as the common pheasant, was placed among the Gallinaceous birds, and

* Journal, p. 352.

it is still called "pheasant." This place and name have been acquired, not only from its size and general figure, but from the noble long tail of the male, two of the feathers of which are much larger than the others, and are bent so as to assume, when the tail is expanded, somewhat of the form of an ancient lyre: hence the name of Lyre-bird (*Menura superba*), by which this fine bird is usually known. Notwithstanding its size, and the curious form of the tail, this large bird, says Gould, "in almost every other point presents a striking resemblance to its minute congeners: like them, it possesses the bristles at the base of the bill; the same unusual mass of loose, flowing, hair-like feathers on the back and rump; the same extraordinary power of running; the like feebleness of flight;" and the young, unlike those of the *Gallinacea*, are said to be helpless and blind when hatched, like those of the other perching birds.

This bird is perhaps the largest of song-birds; it has an inward and varied song, the lower notes of which can only be heard when the observer is close to the bird. Mr. Gould describes its animated strain as "being frequently discontinued abruptly, and again commenced with a low, inward, snapping noise, ending with an imitation of the loud and full note of the Satin-bird, and always accompanied with a tremulous motion of the tail." This naturalist particularizes a habit of the lyre-bird approaching one almost peculiar to the *Gallinacea;* it forms small round hillocks, which it regularly visits during the day. On these the male is constantly trampling, while, at the same time, he erects and spreads out his noble tail, and utters various cries, a mixture of his natural notes and the sounds made by other birds, with the occasional mimicry of the howling of the dingo or Australian dog.

The *Menura* is a difficult bird for the European sportsman to shoot, its mode of eluding pursuit being unlike that of any other bird. It seldom attempts to escape by flying, but runs off with great speed, carrying the tail horizontally. The aborigines, with their noiseless and gliding steps, steal on it as it feeds, without being perceived, and seldom allow one to escape. The bird is of a wandering disposition, and frequents gullies, which it traverses with ease, however steep and rugged, its long legs and strong muscular thighs resisting all obstacles; such is the strength of the muscles of these thighs, that Mr. Gould has been told the bird can leap ten feet perpendicularly from the ground. Among the brushwood and on the slopes of the ground it frequents, it finds abundance of centipedes and beetles, on which it chiefly



Bauerrichter &C° lith.

1. Oreotrochilus Chimborazensis. 2. Oxypogon Guerinii. 3. Trochilus mellivorus.

feeds. Its gizzard is strong and muscular, and can reduce with ease the hard coverings of beetles and even the shells of snails, which are frequently found in their stomachs. The female is similarly coloured to the male, but wants the fine lyre-shaped tail. The brown plumage, the rufous chin, the long handsome tail of the male, with its sixteen feathers,—fourteen of which are very light and loose-webbed, and the two middle ones wide and graceful, the tips black, and the edge of the inner vane brown and barred with darker brown,—combined with the longish feathered head, give this bird an attractive appearance, which is not readily described.

A second species of this fine genus was described by the ornithologist of Australia at a meeting of the Zoological Society on the 5th of February, 1850. Mr. Gould named the species *Menura Alberti*, the Albert Lyre-bird (Plate VI. fig. 2), after his Royal Highness Prince Albert; and from the supplemental part of his great work 'the Birds of Australia,' we derive our notice of this bird.

Mr. Strange, Drs. Bennett and Stephenson at once observed it to be different from the long-known Lyre-bird. Its plumage is rufous, and the lyre-shaped tail-feathers want the brown bars, which mark these light and elegant plumes in the other species. These feathers are shorter too than the other feathers of the tail, while in the *M. superba* they are the longest. There are other differences which need not be here dwelt on. It was first, perhaps, observed to be new, when seen on the Richmond River by Dr. Stephenson in 1849. The sawyers and others employed there regarded it as a distinct species, and told him it was not so timid as the old *Menura,* and that it frequented mountain-ranges not very densely covered with brush. It passes most of its time on the earth, feeding there, and scratching holes in the sandy ground with its large feet. Each bird has three or four of these holes, or "*corroboring places;*" they are two and a half feet in diameter, sixteen to twenty inches deep, and three or four hundred yards apart. In these holes it seems to feed, and may be seen by the lucky observer strutting round and round the place, while his ear will be pleased with "its powerful musical voice," imitating any bird it may chance to hear, such as the giant kingfisher (*Dacelo*). Like the mocking bird, it need not imitate, for it has an "exceedingly beautiful and varied" whistle of its own. Like most great musicians, it has an ear even for discord, and practises—as birds certainly do,—the mavis, for example,—as we well recollect years ago. Dr. Stephenson found insects only in the stomachs of those he dissected.

Mr. Strange tried to find it on its nest, but never succeeded. He found a nest, placed in the spur of a large fig-tree: this the natives assured him was the nest of the *Colwin*, their name for this *Menura*. The nest was large and domed*. Mr. Strange has seen the Albert lyre-tail jump not less than ten feet from the ground, to some convenient branch, so that the powerful femoral muscles which move the large feet are useful in more ways than one, for these leaps are habitual to the bird; Mr. Strange observing that it continued to ascend in successive jumps, till it had reached a height sufficient to fly from it into the gully below.

The third great group into which the Passerine birds are divided is named DENTIROSTRES, from the upper mandible being notched on each side toward the point. Mr. Blyth, one of the best authorities on birds, remarks† that "no trace of this notch is ever visible in the bone, from which the tooth" of certain *Accipitres* is a true process.

This group of birds contains the Warblers, Thrushes, Fly-catchers, Berry-eaters, and Shrikes, to the habits of some of the species of which families we now direct the reader's attention.

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* The nest figured (Plate VI. fig. 2) is in the British Museum.

† Cuvier's 'Animal Kingdom;' edition published by Orr.

Though British birds are as seldom as possible referred to*, yet it would be almost unpardonable to pass by, without some notice, the sweet songster who

> "On bloomy spray
> Warbles at eve, when all the woods are still."

As the nightingale spends only four months of the year in the British Islands, and over the larger portion of them is quite a stranger except by repute, it may be as well to allude to it. The nightingale (*Sylvia Luscinia*),

> "In russet brown bedight,"

has long been the theme of all our poets: pages, or rather volumes, might be filled with extracts of its praises. Like most fine songsters, it is a plainly-plumaged bird, not much bigger than a robin, and clothed with brown feathers, lighter on the under parts. It is fond of caterpillars and insects, and feeds chiefly on them, finding great store of such food in our southern English woods, some of which are filled with its liquid notes. Coleridge's favourite bird at Highgate was the nightingale. In Caen Wood and the gardens on the slope about Mr. Gilman's house he loved to hear them; he refers particularly to "that giddy voluminous whirl of notes which you never hear but when the birds feel the temperature of the air voluptuous*." Its history has been given by Mr. Gosse in a former volume of this series, so we are contented to give the following beautiful extract from 'A Journal of Summer-time in the Country,' by the Rev. Robert Aris Willmott, in whose county of Berks, by all accounts, before and after the days of Miss Mitford†, this exquisite songster particularly abounds; and

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* See another volume of this series, 'Popular British Ornithology,' by P. H. Gosse, for the natural history of the British birds.

> "On the bough,
> Sole-sitting, still, at every dying fall,
> Takes up again her lamentable strain
> Of winding love, till wide around the woods
> Sigh to her song, and with her wail resound."—*Thomson.*

"He left us," says Mr. Willmott, "in August, and has been away between eight and nine months. What he must have seen and heard in his long vacation! While the snow froze on my window, and his neighbour the robin sat piping on that sparkling bough, where was he? Probably enjoying a run among the Greek Isles. I have read of a naturalist who understood the bird-language: why did he not give lessons? I should like to ask this nightingale a few questions about his travels; such as, Whether he compared the dark sea, streaked with deepest purple, with our lake? marble pillars of ruined temples on green hill-sides, with gables and porches of old Berkshire farms? or dim islands—Cos and Ithaca—glimmering through a cloud-curtain of silver, with our country towns, just visible in the early dawn? Perhaps he preferred a town in Egypt, long a favourite winter-home of his kindred. What food for those 'bright, bright eyes,' in the land of sphinxes and mummies! What a stare at the Pyramids, and longing lingering look at Rosetta! Our Loddon—the tranquil and clear-flowing—is a pretty river; but think of the Nile, sprinkled with spreading sails, and bordered by gardens!

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* Letters, Conversations, and Recollections of S. T. C. ii. 212.

† See the charming pictures of English life and scenery in the pages of 'Our Village.'

"Pleasant falls the shade from vast boughs of sycamore and fig-trees! I can see him plunging into the twilight groves of date, citron, lime, and banana, and covering himself over in gloom and fragrance. There truly he might sit 'darkling.' What bowers of roses! But no; our wood challenges the world for roses; and here Hafiz might have contented his own Bulbul. Surely that 'bright, bright eye' drank in with wonder the living figures of the landscape; and strangest of them all, the Arab in his long blue dress, at the door of the mosque of Abu-mandur. How different from our parish-clerk shutting the church-windows in the evening! One is curious to know what a nightingale, on his first tour, would think of his own feathered brethren and the quadruped race,—of that rare fellow the pelican, with his six-men-power appetite; and the buffalo, his black nose snorting the Nile into foam as he crosses from side to side. But the sweet musician who sits on his branch rejoicing, quite heedless of me or my speculations, may have taken a different road. If he had visited the Archipelago and Egypt in former years, did he turn his wings to Syria? Again I sigh for the bird-language. Touching stories that tongue might tell of the field which the Lord hath blessed with the dew of heaven, the fatness of the earth, and plenty of corn and wine; of the woody tops of Carmel; the sunny vineyard, and grassy upland; the damask rose; the stately palm of the Jordan; the silver sands of Gennesaret, and the sweet flowers

> 'That o'er her western slope breathe airs of balm;'

the hum of bees in clefts of the rocks; the solemn olive-garden; the lonely wayside! For, think of the reach of that large dark eye! A French naturalist has calculated the sight of birds to be nine times more powerful than that of man. Belzoni himself would have been nearly blind by the side of this little brown explorer. But, oh! unmindful nightingale! a broader, brighter eye was bent over thee—the eye that never slumbers nor sleeps—as thou screenedst thyself in the orange branches. If even young ravens that call on Our Father are fed from His hands, and the sparrow, sitting alone on the house-top, does not fall to the ground unobserved or uncared for, surely thou art ever seen and watched in the rose-gardens of the East, and the green coppices of English woods—dear pilgrim of music and beauty, I think thou art God's missionary, publishing abroad His wonders and love among the trees, most eloquent when the world is stillest*."

In Australia, the place of our familiar robin is more than supplied by an allied genus called *Petroica,* of which there are several species, the males of which are generally black above, the wing prettily varied with white, the crown in some capped with scarlet (*P. Goodenovii*), while in most there is a white patch just above the bill; the under side is white or greyish-white, the breast having a gorget of vermilion, scarlet, or pink-coloured feathers, varying in the species. The females are somewhat similarly plumed with their partners, brown however taking the place of the fine deep black, and the red breast being of a soberer shade. Some of the species however are without red breasts. One of the most common is the Red-breasted Warbler of Lewin (*Petroica multicolor,* Plate VII. fig. 1), a species which often reminds the colonists of the familiar and pretty robin of their native land. Mr. Gould, in his 'Birds of Australia,' says:—"When far removed from our native land, recollections and associations are strong incentives for attachment to any object that may remind us of our home; hence this beautiful robin, which enters the gardens and even the windows of the settlers, is necessarily a great favourite; its attractiveness moreover is much enhanced by its more gay attire, the strong contrasts of scarlet, jet black, and white rendering it one of the most beautiful to behold of any of the birds of Australia." The favourite places of resort of this species are low bushes and woods skirting open plains, where it can get its food in abundance. Insects of all kinds, from soft plant-lice to hard-skinned beetles, flying, crawling, and at rest, are its food. Its song and call-note are feeble compared with our robin, but somewhat resemble those of that clear-toned bird, with which in autumn we are so familiar. Mr. Gould describes the nest as being a compact structure of dried grasses, narrow strips of bark, mosses, and lichens, united into a comfortable receptacle for its eggs and young, with cobwebs and vegetable fibres, while the inside is lined with feathers and wool or hair: it is placed generally in the hollow part of a tree, a few feet above the ground. There are usually two or three broods in the course of a year.

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* Journal of Summer-time in the Country, pp. 29–32.

Another species, the *Petroica phœnicea*, which is very abundant in Van Diemen's Land, is so familiar, that Gould mentions his taking a nest of it from a shelving bank in the streets of Hobart Town; and in the gardens and fields of the neighbourhood it readily takes up its abode, being quite fearless of the vicinity of man.

Famed as many birds are for skill and contrivance in the "architecture" of their nests, no genus has obtained so much celebrity as the "Tailor-bird" of India. This bird is a species of Dr. Horsfield's genus *Orthotomus**, and is not uncommon in various parts of India, especially frequenting gardens and cultivated ground. Mr. Jerdon describes it in the 'Madras Journal' (vol. xi. p. 2), as living in pairs or in small flocks, and as being always engaged in hopping about the branches of trees and shrubs, peas and other vegetables, with a loud reiterated note, picking up ants and small grubs, which are crawling on the leaves and bark. When it is feeding or hopping about, it has the habit of often jerking its tail, somewhat like our wagtail, and it occasionally raises the feathers on the lower part of the throat, displaying a small black stripe which exists on each side. Lieutenant Hutton* was among the first to give an accurate description of the tailor-bird, properly so called, and of its nest; for other birds somewhat resembling it in habits, have been described as "the real Simon Pure," though not nearly so able in their sewing powers as this little *Orthotomus*.

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* *Orthotomus Bennettii*, Sykes; by Lieutenant Hutton it is described as *Sylvia ruficapilla;* and it may be the *Sylvia longicauda*, Vieillot.

Lieutenant Hutton describes a nest which he found in the garden of Captain (now Brigadier-General) Hearsey, F.L.S.: he says it "was neatly formed of raw cotton and bits of cotton threads, woven strongly together, thickly lined with horse-hair, and supported between two leaves on a twig of the *Amaltás*-tree (*Cassia fistula*). These two leaves were first placed longitudinally upon each other, and stitched in that position, from the points to rather more than half-way up the sides, with a strong thread; this was spun from the raw cotton by the bird, leaving the entrance to the nest, at the upper end, between the stalks of the leaves, at the point where they join the branch of the tree. Both of these leaves were of course green and living. Subsequently however they were blown down by a high wind, and being now withered, the nest appears enclosed between dead leaves." Lieutenant Hutton describes a second nest which he found in the same garden: it contained an egg and two young birds nearly fledged. This nest was at the end of the branch of the *Bhela* (*Semecarpus* sp.), and placed about two feet from the ground, and formed of raw cotton, cotton thread with a little flax, and lined with horse-hair alone. The leaves were stitched together partly with thread prepared by the bird, and partly with spun thread, and so carefully was it concealed, that it was difficult to find it.

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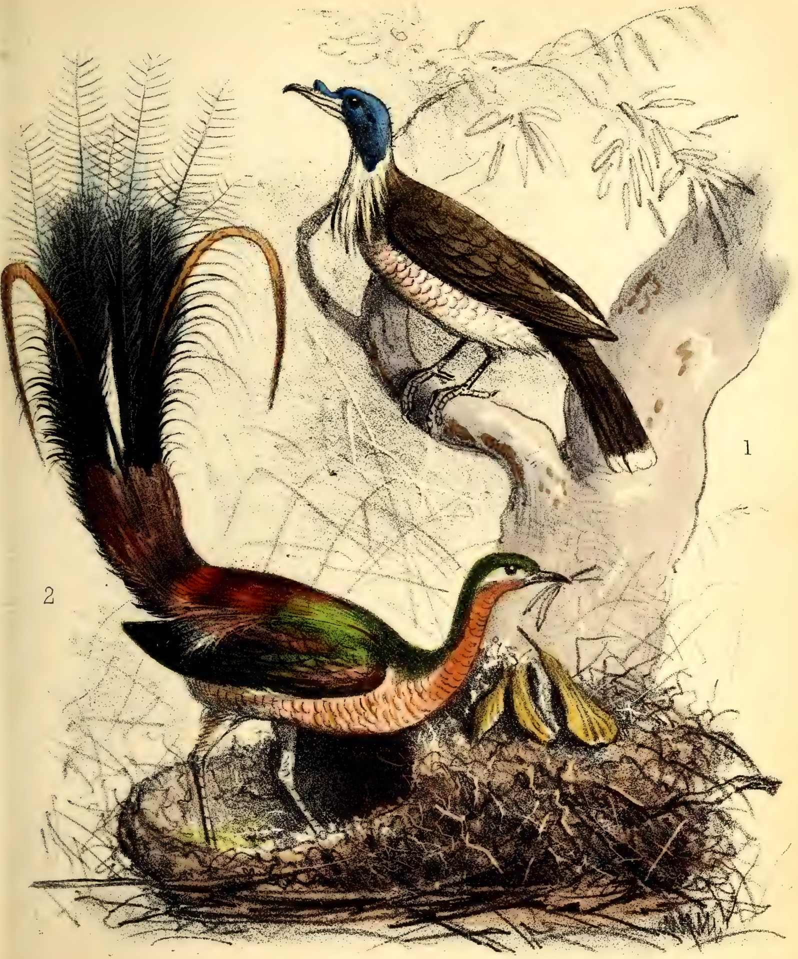
* Journal of the Asiatic Society of Bengal, vol. ii. pp. 502, 505; pl. xviii.

The species of *Prinia*, a genus first described by Dr. Horsfield, and containing small birds natives of India and the East Indian Archipelago, build nests with an ingenuity somewhat resembling that of the tailor-bird. A species of *Sylvia*, common in Southern Europe (the *S. cysticola*, Temm.), connects the sedges and other plants growing on the banks of ditches with real stitches also. This small bird forms, seemingly with her beak, small holes in the edges of the leaves of reeds and sedges, and through these holes she passes one or more threads, composed apparently of spider's web. These threads are not long enough to pass more than two or three times from one leaf to another; they are knotted by the careful little architect, whose nest is thus safely hung over the water.

The Superb Warbler of Australia (*Malurus cyaneus*) belongs to a genus of several species, the males of which are conspicuous for the loveliness of their plumage. This plumage, consisting of blue and black most harmoniously mingled, is of a peculiar softness and delicacy. According to Mr. Gould, the historian of the *Maluri* and all the Australian birds, this fine colouring is most usually found only for a few of the spring months; and he says that as spring advances, when they separate into pairs, "a more astonishing change can scarcely be imagined;" the plain and unassuming garb of the male during the winter months, at which time it is very similar to the female, "being thrown off for a few months and another assumed, which, for resplendent beauty, is hardly surpassed by any of the feathered race, certainly by none but the humming-birds and the cotingas of America: nor is the change confined to the plumage only, but extends also to its habits; in fact, its whole character and nature appear to have received a new impulse; the little creature now displaying great vivacity, proudly showing off its gorgeous attire to the utmost advantage, and pouring out its animated song unceasingly," cheering his partner during the cares of incubation, and assisting her in procuring food for their young brood.

In winter, when a plain bird, this *Malurus* becomes tame, and frequents the gardens and outgrounds of the settlers, and, robin-like, seems to court his attentions; but in spring, the male, when in court dress, becomes apparently shy of his gorgeous clothing, as if afraid that the fine plumage should lure the gun of the colonist. Its wings are short and rounded, so that they are not adapted for continued flight: it passes over the ground with great facility, by a succession of bounding hops; at such a time the tail is carried perpendicularly or thrown forward over the back. The nest is a domed one, with a small hole at the side, and is generally formed of grass and lined with feathers and hair. The female sometimes becomes the foster-mother of the bronze cuckoo, which imitates, in this respect, the abandoned habits of its more historically famed European kinswoman. The chief food of this *Malurus* consists of insects collected on the ground: its notes resemble those of our wren.

There are several other beautiful species of this genus found in different parts of Australia. Among these may be



Bauerrichter & C.° lith

1. Tropidorhynchus corniculatus. 2. Menura Alberti.

mentioned the white-winged *Malurus* (*M. leucopterus,* Plate VII. fig. 2), the male of which is nearly entirely of a blue colour, the wings, excepting on the quills, being of a snow-white. Other species have red in greater or smaller patches on the back (*M. melanocephalus, Lamberti, Brownii*). The Emu Wren (*Stipiturus malachurus*) is allied to these birds, and is curiously furnished with a singular, loose, webbed tail, which scarcely seems to belong to it; the feathers also of this tail have some resemblance to the curious double feathers of the gigantic Emu,—and hence the name of the little bird.

One of the most common birds in every garden in India is the *Iora tiphia,* a species closely allied to the Javanese one. It is a most restless and active bird, in its habits somewhat resembling our titmice. Mr. Jerdon notices it* as "diligently and carefully searching the smaller branches and twigs of trees, climbing actively among them, peering under the leaves, and occasionally hanging, like a titmouse, from a slender twig, all the while keeping up a loud warbling strain, or a low querulous sort of note, very different from each other." He tells us that the name in Hindustan is *Show-bheega,* and that the bird has acquired this name from its cry before rain resembling those words repeated. The *Iora* feeds on insects, spiders, and grubs.

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* Madras Journal, vol. x. p. 248.

Dr. Horsfield describes the *Iora scapularis* of Java as a bird of social habits, which resorts to the vicinity of human dwellings; indeed so much so, that "it appears to have retired from the forests, and established itself in the trees and hedges which surround the villages and plantations." There it may be seen, flying from branch to branch; it is most active in the middle of the day, when the heat of the sun is greatest, and the inhabitants uniformly retire to rest. Its enlivening song may then be heard, during the silence of noon, as it sports between the branches. Its food consists of small insects, which it finds often on and in the bark of trees*.

There is no accounting for taste in either men or birds; although the great mass of the soft-billed birds build their nests in trees, there are others that abjure such situations. One of these, the Solitary Rock Warbler of New South Wales (*Origma rubricata*), suspends its nest to the ceilings of caverns, and the under surface of overhanging rocks. Mr. Gould observed this bird frequently in Australia, and found that this was its invariable habit. This nest is of an oblong globular form, and is formed of moss and such like substances; it is suspended by a narrow neck. The bird is social in its habits, as the naturalist we have quoted found sometimes three or four of these nests, suspended to the roof of the same small, dark cavern. The bird, which is brown above and rusty-coloured below, frequents the neighbourhood of watercourses and rocky gullies, in which, like our dipper and wagtail, it finds its insect food; it never visits the forests, and Mr. Gould never saw it even perch on the branch of a tree.

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* Dr. Horsfield. Zoological Researches in Java.

It is charming in a book of travels to meet with a lover of Natural History; and when we read about the natives of our antipodes, with their curious manners and strikingly-different appearance from ourselves, it is pleasing to find that "they *too* have song-birds." Most of the birds referred to in the two following paragraphs belong to this group.

The Rev. William Yate, of the Church Missionary Society, resided seven years in New Zealand, and the results of his observations appeared in 1835. He evidently carried with him from England a great love of birds:—"Nothing can possibly exceed the exquisiteness of a morning concert, as performed in the ample woods of these islands. One of the greatest treats which I enjoy, is to be wakened in my tent by the loud and lovely voices of the only musicians I have met with since I left the lark and the nightingale behind me in much-loved England. Their song is too sweet to be of long continuance. At the first dawn of day it commences, and gradually heightens as the light increases; but no sooner does the sun appear, gilding the hills with his bright beams, than the performers, one after another, retire, and all the lovely sounds die away into profound silence; or, if the silence be broken, it is only by the shrill note of some unmusical bird, who dared not to appear till his more melodious companions had retired into the woods, either to prepare for or to take care of their young, and to repose after the exertions of the morning*."

The song of birds seems to be much influenced by the season of love; and yet, as Mr. Hepburn remarks, it does not entirely depend on that season, as many birds sing in the autumn and winter, as well as in the spring and summer. His remarks on the time our native song-birds commence their morning lays are as follows:—"In the beginning of July, at about half-past one o'clock, up springs the skylark to greet the coming morn; at two the swallow 'twitters from his straw-built shed;' soon the mellow-toned blackbird and thrilling thrush call up the grove; the robin redbreast takes up the burden of the song, and the wren, as he bustles from his ivy roost, joins the strain; now the blackcap is heard loud and clear. Let the enraptured ear dwell for three or four minutes on the charming and ever-varied song of the garden warbler, rising and falling in the softest and sweetest swells and cadences. Advancing along the woodland path, we listen to the melody of the green woodwren; the curious song of the yellow woodwren, high up in the beechen tree; the notes of the whitethroat, in some individuals musical, in others harsh; and of many other songsters, which mingle with the call of the cuckoo, and the murmur of the cushat."

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* Rev. W. Yates Account of New Zealand, p. 52.

We may just allude to the Titmice (*Parinæ*), a beautiful subfamily of warblers, the species of which are met with in the temperate regions of the earth, or on mountains in the warmer parts at considerable elevations. Who has not admired our Ox-eye (*Parus major*) or the little Blue Tit (*Parus cæruleus*) on the slim branches of a tree, "perfect mountebanks, as it seems to matter little to them whether their heads or their heels are uppermost; dancing at one moment in antics round the branches of a tree, and at the next hanging suspended from its most slender twigs*"?

The family TURDIDÆ contains the Thrushes, Ant-Thrushes, and Orioles, an extensive and widely distributed group of birds. We have several species of this family in the British Islands, such as the freckled-breasted Mavis, or Song-Thrush (*Turdus musicus*), one of the sweetest of our songsters, whose nest and eggs are often the prey of the prowling schoolboy in the month of April; the Blackbird (*Turdus merula*), which often exposes its nest, as if in exuberance of familiarity,—a nest curious for the mud with which it is plastered; the Ring-Ouzel (*Turdus torquatus*), so partial to the more northerly parts of our island; the large Missel Thrush, which pours its "peculiarly wild, full note from the top of some high tree," and becoming tame in spring, builds its nest in fruit-trees, sure of protection. These species build solitarily, and habitually reside here; and we only allude to them as introductory to the mention of the Redwing and Fieldfare, two other species, which leave these islands for Norway and Sweden, or other northern countries, to rear their young.

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* Hewitson's 'British Eggs,' vol. i. p. 111.

Mr. Hewitson*, who visited the boundless forest scenery, and some of the thousand islands, of Norway, chiefly to get eggs and information on the habits of migratory British birds, speaks of the redwing (*Turdus iliacus*) as being solitary and shy; while its "loud, wild, and most delicious song seldom failed to cheer" him and his companions, Messrs. Hancock and Johnson. In some parts of Norway the redwing is called the "nightingale," and well it deserves its name; for he says that "its clear, sweet song would occasionally delight us during the hours of night, if the two or three delightful hours of twilight, which succeed the long day of a Norwegian summer, can be called night. The birds, like the other inhabitants of the country, seem loath to lose in sleep a portion of this short-lived season*."

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* His admirable work, had we been writing on British birds, would have supplied us with much valuable information; it is stored with lively notices of the habits of birds, and contains certainly the best figures of eggs ever published. 'British Oology: Coloured Illustrations of the Eggs of British Birds, accompanied with descriptions of the Eggs, Nests, etc.,' by William C. Hewitson. 2 vols. 8vo, London, 1846. See the new edition, "Eggs of British Birds."

About the end of April, in the year 1833, he noticed that the fieldfare (*Turdus pilaris*) left the neighbourhood of Newcastle; and by the 14th of May our friend was among the woods of Norway, where he found the fieldfare had already commenced the cares of "the production of other colonies, to visit us in future years." He soon found a colony of fieldfares, and we give, in his own words, the result of his visit to it: "We very soon forgot our toils in the delight which we experienced at the discovery of several of their nests, and were surprised to find them so contrary to the habits of the rest of the genus with which we are acquainted, breeding in society. Their nests were at various heights above the ground, from four to thirty or forty feet or upwards, and mixed with old ones of the preceding summer; they were for the most part placed against the trunk of the spruce fir-tree; some were however at a considerable distance from it, towards the smaller end of the thicker branches. They resemble most nearly those of the ring-ouzel; the outside is composed of sticks and coarse grass and weeds gathered wet, matted together with a small quantity of clay, and lined with a thick bed of fine dry grass*."

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* Hewitson's 'British Eggs,' vol. i. p. 61.

Mr. Hewitson adds that two hundred nests or upwards may be found within a small circuit of the forest.

Dr. Horsfield, in his zoological researches in Java, met with a fine song-bird on Mount Prahu, at an elevation of 7000 feet above the sea. He says:—"It utters, almost without interruption, a varied song. Its common note is a quickly-reiterated babbling, resembling that of the *Curruca garrula* and other birds of this family; it has also a protracted plaintive note; but it sometimes rises to higher and melodious warblings, which, in the general silence of these elevated regions, afford an inexpressible sensation of delight to the mind of the solitary traveller."

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* Hewitson's 'British Eggs,' vol. i. p. 58.

Like the Solitaire of Jamaica, this bird, the Mountaineer Warbler (*Brachypteryx montana,* Horsfield), is a plain-plumaged bird, delighting in mountain-ranges covered with luxuriant vegetation and gloomy thickets, where the Doctor occasionally observed it, in its short sallies amongst the openings of the forest. It has the general structure of the redstart and wheatear, but differs from them particularly in having a very short, blunt wing, and in its tarsi being more slender. This shortness of wing prevents it taking long flights; it is chiefly met with on the lowest branches of trees, or on the earth, and finds in the dense forests which it frequents, an abundant supply of the larvæ of insects and worms, which constitute its chief food*.

The nests of at least two species of an Australian genus, belonging to this group, are remarkable for their site. Mr. Gould has described them in his great work. He says:—"All those who have rambled in the Australian forests must have observed, that in their more dense and humid parts, an atmosphere peculiarly adapted for the rapid and abundant growth of mosses of various kinds is generated, and that these mosses not only grow on the trunks of decayed trees, but are often accumulated in large masses at the extremities of the drooping branches. These masses often become of sufficient size to admit of a pretty, brown, yellow-throated bird, with a black patch of feathers from the base of the bill to behind the eye, named *Sericornis citreo-gularis*, constructing a nest in the centre of them with so much art, that it is impossible to distinguish it from any of the other pendulous masses in the vicinity. These branches are frequently a yard in length, and in some instances hang so near the ground as to strike the head of the explorer during his rambles; in others they are placed high up upon the trees, but only in such parts of the forest where there is an open space, entirely shaded by overhanging foliage. As will be readily conceived, in whatever situations they are met with, they at all times form a remarkable and conspicuous feature in the landscape. Although the nest is constantly disturbed by the wind, and liable to be shaken when the tree is disturbed, so secure does the inmate consider itself from danger or intrusion of any kind, that I have frequently captured the female while sitting on her eggs." It would seem that another species of the genus (*Sericornis magnirostris*) has a similar nest, to which it resorts for several successive seasons, and probably for a series of years. This species seems to be shy; it keeps among the branches of high trees, and lives on insects, which it captures plentifully in such situations.

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* Zoological Researches in Java, No. 7.

One of the most beautifully though simply plumaged birds of the East is the *Irena puella*, or Fairy Roller, of India, the male of which is of the deepest black, with the crown of the head, upper side of the neck, back, wing, and tail-coverts of the most resplendent smalt-blue colour. It has short tarsi and weak claws; its bill is strong, and the nostrils are covered with *vibrissæ* and velvety feathers. According to Dr. Horsfield, who first described the genus*, it is rare in Java, concealing itself on solitary hills, far from the haunts of man, and feeding on the fruits and wild seeds which it finds in the mountain woods and forests. Sir Stamford Raffles met with it in Sumatra. Mr. Jerdon† finds it to be common in the lofty forest jungles of Malabar, where it is met with in small parties of four or five, frequenting the summits of the loftest trees, as if, like our purple emperor butterfly, the "fairy blue-bird" was chary of showing its charms. Its presence however is soon detected by the loud, mellow, agreeable warble which it frequently repeats.

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* Zoological Researches in Java, No. 1.

† Madras Journal, vol. x. p. 262.

In Australia there are some prettily-variegated thrushes named *Cinclosoma.* Unlike our thrush tribe, these birds are not famed for their melody, though the beauty of their markings renders them very attractive objects among the stony hills and rocky gullies which they frequent. The flesh of one species, the spotted ground-thrush (*C. punctatum*), is much prized. Mr. Gould tells us that in Hobart Town the bird is sold in the market under the name of "Ground Dove," an appellation given to it from its habit of running and feeding on the ground like pigeons. The nest of this species is a careless structure, formed of leaves and the inner bark of trees; it is placed on the ground, under the bield of a stone or tuft of grass.

Closely allied to the thrushes in many respects, are a curious-looking set of birds called *Pitta,* named by the French "Brèves." They are seemingly devoid of all tail; this appendage however is present, although much curtailed. The birds are long-legged, and live much on the ground, running with great facility. Like the thrushes, the sexes very closely resemble each other; but it is curious to find that the young, like those of the kingfishers, are plumed and coloured exactly like the adult from the time they leave the nest. Mr. Gould has noticed this peculiarity in his

'Birds of Australia,' under the head of *Pitta strepitans,* the differences between the young and adult being very inconsiderable in marking. Most of the species of *Pitta* are beautifully feathered, the colours generally in bright contrasts. One exceeds its neighbour even in this respect, the Rainbow Pitta (*Pitta Iris,* Plate VII. fig. 3), found on the north coast of Australia. The head, neck, and under parts are black; a band of brown extends from over the eye to the back of the head, and relieves the black; while the golden-green of the back and wings is increased in brilliancy, not only by the black of the other parts, but by a fine full-bodied emerald-green edging on the shoulder, separated from the green of the rest of the wing by a blue like that of the *lapis lazuli.* The under tail-coverts, and part of the body behind the legs, are of a fine bright scarlet. This bird, searching, as Mr. Gould tells us it does, for its insect food among the thick cane-beds near the coast, must form a most attractive object even from a distance, and light up to the traveller a spot, which without it might look barren.

S. Müller and Schlegel* describe the *Pitta cyanura,* a common bird in the islands of the Eastern Archipelago, as running very quick, and keeping to the somberest places. The adult males, when they meet, fight like quails, and other pugnacious birds, living on the ground. The nest of this *Pitta* is formed among bushes, near the ground, and is frequently concealed from view by orchids and other parasitic plants. When seeking its food on the ground, it may be seen, like a fowl, scratching up the dried leaves with its feet. Its food consists of earthworms, white ants, and other insects, with their larvæ.

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* Monograph of *Pitta* in book on the Dutch Possessions in the Eastern Sea.

The *Malacocirci*, of which the *Turdus griseus* of Latham is the type, have large tails, broad, soft, and sombre plumage, and are found in the East exclusively. Mr. Jerdon says:—"I have often amused myself in imagining that they are not inapt representatives of the Hindoos; certainly, as far as their frequent congregating together and their incessant noisy chattering and gabbling, they agree; and were I disposed to carry on the similitude further, it would not, I think, be a difficult task. The typical species, the *Keyr*, or White-headed Babbler (*Malacocircus griseus*), is abundant in the Carnatic, where they are often seen seeking insects or grain from heaps of dung, whence their English name, "Dirt-bird," and French appellation, "Fouille-merd." They capture insects, but are not powerful on the wing.

The nest is composed of small twigs and roots carelessly put together, and not high above the ground; the eggs are blue. The *Oxylophus edolius,* or Black-and-white-crested Cuckoo, deposits its greenish-blue egg in the nest of this bird by preference*."

Pre-eminent among song-birds is the "Mocking-bird" of the United States and the West Indian Islands. He is a plain bird, so much so as perhaps to be one of the last in an aviary to arrest attention, were it not for his imitative powers, which soon attract notice to their utterer. The American Ornithologist has described his powers with his far-famed pen. He tells us: "He many times deceives the sportsman, and sends him in search of birds that perhaps are not within miles of him, but whose notes he exactly imitates; even birds themselves are frequently imposed on by this admirable mimic, and are decoyed by the fancied calls of their mates, or dive with precipitation into the depths of thickets at the scream of what they suppose to be the sparrow-hawk†."

We have only once heard the mocking-bird. The specimen was in a house in Bloomsbury, where the cries of the street mingled curiously with the songs of larks, the chirping of sparrows, and the notes of different caged birds, from magpies to "Virginia nightingales." To any unusual sound that reached his ear he seemed to listen, as if to take it in, and soon gave utterance to a close imitation of part of it, generally ending however with very different notes. The sounds in London streets are so various, that they must defy any mocking-bird. Wilson describes the mocking-bird in a domesticated state in places less populous than London:—"He whistles for the dog; Cæsar starts up, wags his tail, and runs to meet his master. He squeaks out like a hurt chicken, and the hen hurries about with hanging wings, and bristled feathers, clucking to protect its injured brood. The barking of the dog, the mewing of the cat, the creaking of a passing wheelbarrow, follow with great truth and rapidity. He repeats the tune taught him by his master, though of considerable length, fully and faithfully. He runs over the quiverings of the canary, and the clear whistlings of the Virginia nightingale, or red-bird, with such superior execution and effect, that the mortified songsters feel their own inferiority, and become altogether silent, while he seems to triumph in their defeat by redoubling his exertions."

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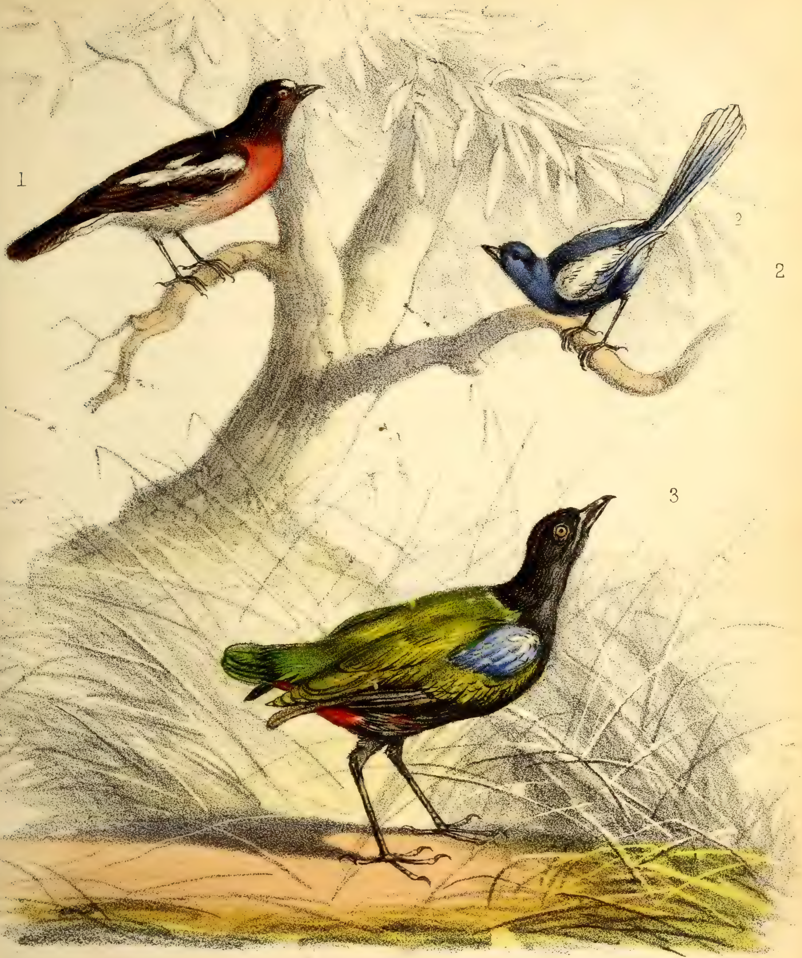
* Jerdon, Illustrations of Indian Ornithology, pl. xix.

† American Ornithology, by Alexander Wilson (Prof. Jameson's edition), vol. ii. p. 93.



Bauerrichter & C.º lith.

1. Petroica multicolor. 2. Malurus leucopterus. 3. Pitta Iris.

His musical powers are not limited to those of imitation, for the mocking-bird, Wilson tells us, has "a voice full, strong, and musical, and capable of almost every modulation, from the clear mellow tones of the wood-thrush to the savage scream of the bald-eagle. In measure and accent he faithfully follows his originals. In force and sweetness of expression he greatly improves upon them. In his native groves, mounted on the top of a tall bush or half-grown tree, in the dawn of dewy morning, while the woods are already vocal with a multitude of warblers, his admirable song rises pre-eminent over every competitor. The ear can listen to *his* music alone, to which that of all the others seems a mere accompaniment. Neither is this strain altogether imitative. His own native notes, which are easily distinguishable by such as are well acquainted with those of our various song-birds, are bold and full, and varied seemingly beyond all limits. They consist of short expressions of two, three, or at the most five or six syllables, generally interspersed with imitations, and all of them uttered with great emphasis and rapidity, and continued with undiminished ardour for half an hour or an hour at a time. His expanded wings and tail glistening with white, and the buoyant gaiety of his action, arresting the eye, as his song most irresistibly does the ear, he sweeps round with enthusiastic ecstasy—he mounts and descends as his song swells or dies away. . . . While thus exerting himself, a bystander destitute of sight would suppose that the whole feathered tribes had assembled together on a trial of skill, each striving to produce its utmost effect, so perfect are his imitations*."

Our excellent friend, Mr. Gosse, was no less struck with the song of this "master musician" in Jamaica. He tells us† that the bird in that island is "abundant in almost all situations, from mountain-peak to sea-shore, but especially common in the orchards and about the homesteads of the lowlands." Its voice is heard through the whole year, even when other birds are silent; "and that not by ones or twos, but by dozens and scores, each straining his melodious throat to outsing his rivals, and pouring forth his full expressive strains in all the rich variety for which this inimitable songster is so famous. . . . If all the birds of Jamaica were voiceless, except the mocking-bird, the woods, and groves, and gardens would still be everywhere vocal with his profuse and rapturous song.

"In those brilliant nights, when the full-orbed moon shines from the depth of the clear sky with such intensity that the eye cannot gaze upon the dazzling brightness of her face, shedding down on plain and sea a flood of soft light sufficient to enable one to read an ordinary book with ease in the open air, how sweet, how rich, how thrilling, are the bursts of melody that rise from the trees around—the serenades of wakeful mocking-birds! Nothing to be compared to it have I ever heard in England; the night song of a single bird, however fine may be its execution, is no more to be put in competition with such a chorus, than the performance of a single musician with that of a band. Nights so lovely are seen only in the tropics, and the music is worthy of the night."

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* American Ornithology, vol. ii. p. 92.

† A Naturalist's Sojourn in Jamaica, by Philip Henry Gosse, p. 171.

In the Carnatic, a large district of India, the common Bulbul (*Hæmatornis cafer*) is commonly kept caged, as a fighting bird. Mr. Jerdon says it fights with great spirit, the antagonistic birds seizing each other by the red under tail-coverts and endeavouring to pull them out. The bird feeds chiefly on fruit, and is often destructive to peas and other garden productions. Another species of this musical genus, the Jungle Bulbul (*Hæmatornis jocosus*), seems to deserve more than the former the honoured name of Bulbul, associated with ideas of Persian nightingales and the sweetest music. It is a lively active bird, and Mr. Jerdon mentions it as being abundant on the summit of the Neilgherries, where its warbling, chirruping notes must prove pleasing to many an invalid.

Mr. Vigne* says that the Bulbul of Kashmir (*Ixos leucogenys*) is but a sorry substitute for the European nightingale: "His note resembles that of the English blackbird, but is by no means so full and musical. He is about seven inches and a half in length; bill, head, and legs black; general colour of plumage olive greenish-brown, with a white spot behind the eye, and white tips to the tail-feathers; on the head is a black pointed crest, beautifully curved forward like the plume of a helmet; his manners are those of a tomtit, quarrelsome and noisy, but amusing and very bold, as they will sometimes come into a room where a person is sitting. He differs from the bulbul of the plains in having a yellow patch under the tail, whereas that of the latter is red; and in the hills between Kashmir the spot is of a transition colour, between red and yellow."

The family of the Fly-catchers, MUSCICAPIDÆ, is an extensive one, with horizontally-depressed beak, furnished with bristles at its base. The Tyrant Fly-catchers (*Tyranninæ*) are peculiar to America, and are furnished with a long, straight, strong bill; the ridge of the upper mandible flat, and the point hooked. Many of the species have yellow or red feathers on the crown of the head, which are often invisible when the birds are resting. The American Ornithologist has described, in his usual spirited manner, the habits of the common North American species. This bird, which is generally known in the United States as the King-bird, during the time of breeding attacks every intruder who ventures to go near its nest and young. "In the months of May, June, and part of July," says Wilson, "his life is one continued scene of broils and battles, in which however he generally comes off the conqueror. Hawks and crows, the bald eagle and the great black eagle, all equally dread a rencontre with this dauntless little champion; who, as soon as he perceives one of these last approaching, launches into the air to meet him, mounts to a considerable height above him, and darts down on his back, sometimes fixing there, to the great annoyance of his sovereign, who, if no convenient retreat or resting-place be near, endeavours by various evolutions to rid himself of his merciless adversary." In this way he continues his attack, sometimes for more than a mile, till he is released by another fly-catcher equally eager to follow up the persecution. Wilson says that this turbulent spirit vanishes whenever the young are able to shift for themselves, and that the tyrant then becomes a mild and peaceable, and very useful bird. The chief food of this species consists of insects, of which they destroy hundreds daily, and Wilson says that they are also extremely fond of blackberries.

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* Travels in Kashmir, etc., by G. T. Vigne, Esq., vol. ii. p. 20.

Mr. Darwin was struck at Maldonado with the *Saurophagus sulphureus,* which is very common there; it is called by the Spaniards "Bien-te-veo" (I see you well), from its cry resembling these words. He frequently observed it hunting a-field, when it hovers over one spot, like a hawk, and then proceeds to another. He adds that it frequently haunts the neighbourhood of water, and remains stationary, like a kingfisher, till some small fish comes near the margin, which it catches. In the evening this bird takes its stand on a bush, and continually repeats the shrill and rather agreeable cry alluded to. At Maldonado it is sometimes kept in a cage, or in the courtyards with its wings cut; and soon getting tame, amuses its captors with its cunning odd manners, which somewhat resemble those of our magpie*.

The *Milvulus forficatus* (Plate VIII. fig. 1) has a forked tail, terminated by two long feathers; the Spaniards in South

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* Journal, p. 62.

America call it 'Scissor-tail.' Mr. Darwin* describes it as being very common near Buenos Ayres. It sits on the branch of a tree, flying a short way after insects, and returning to the same spot. When in the air it can turn very shortly; and, in doing so, opens and shuts its tail in a horizontal, lateral, or vertical direction, like a pair of scissors. In the air it has some resemblance to a common swallow, both in its flight and general appearance.

The family AMPELIDÆ contains many finely-coloured birds, chiefly found in the warmer parts of the world; one species only, the Bohemian Wax-wing, is an occasional visitant to the British Islands.

Waterton has made many a reader familiar with one species of this group. It is the Bell-bird, or Campanero of Demerara (*Procnias carunculata,* Plate VIII. fig. 2), a white bird, as large as our jay. On its forehead rises a spire nearly three inches long. This is tubular, and communicates, it would seem, with the palate: when empty, it is pendulous; when filled with air, it is erect. It is covered with a deep-black skin, dotted over with small white feathers. This species is one of the few South American tropical birds which are heard during the sultry heat of noon; at such a time he never fails to attract the notice of the traveller, and, according to the authority just quoted, may be heard at a distance of three miles, tolling its note every three or four minutes, like the bell of some far-off convent. From this circumstance the bell-bird has acquired its Spanish and English name. The top of a lofty Mora-tree is at such times its favourite resort; but we must let the 'Wanderer in Demerara' tell the story of its notes. "With many of the feathered race, he pays the common tribute of a morning and an evening song; and even when the meridian sun has shut in silence the mouths of almost the whole of animated nature, the campanero still cheers the forest. You hear his toll, and then a pause for a minute; then another toll, and then a pause again; and then a toll, and again a pause. Then he is silent for six or eight minutes, and then another toll; and so on. Actæon would stop in mid-chase, Maria would defer her evening song, and Orpheus himself would drop his lute, to listen to him; so sweet, so novel, so romantic is the toll of the pretty snow-white campanero. He is never seen to feed with the other *cotingas,* nor is it known in what part of Guiana he makes his nest*."

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* Journal, p. 163.

Some of the species of this family have acquired celebrity from the fineness of their note. The Solitaire of Jamaica, and other West Indian Islands (*Ptilogonys armillatus*) is one of these. According to Mr. Gosse and his correspondent Mr. Hill, this bird is particularly partial to woods near the summits of lofty mountain-ridges, where its fine sweet notes, and their sudden recurrence at considerable intervals, amid the lone and sombre silence of the lofty elevation, assume quite a romantic character*. Mr. Hill thus describes the singing of this bird :—"As soon as the first indications of daylight are perceived, even while the mists hang over the forests, these minstrels are heard pouring forth their wild notes in a concert of many voices, sweet and lengthened like those of the harmonicon or musical glasses. It is the sweetest, the most solemn, and most unearthly of all the woodland singing I have ever heard. The lofty locality, the cloud-capt heights, to which alone the eagle soars in other countries—so different from ordinary singing-birds, in gardens and cultivated fields—combine, with the solemnity of the music, to excite something like devotional associations. The notes are uttered slowly and distinctly, with a strangely measured exactness. Though it is seldom that the bird is seen, it can scarcely be said to be solitary, since it rarely sings alone, but in harmony or concert with some half-dozen others, chanting in the same glen. . . . It regards the major and minor cadences, and observes the harmony of counterpoint with all the preciseness of a perfect musician. Its melodies, from the length and distinctness of each note, are more hymns than songs*." It is exclusively upon berries that the solitaire feeds.

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* Wanderings, pp. 113, 114.

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* Birds of Jamaica, p. 199.

The Brazilian forests abound in finely-plumaged birds. Few are more striking than the bright orange-coloured "Cock of the Rock" (*Rupicola Brasiliana,* Plate VIII. fig. 3), a species about the size of a pigeon, and marked by the fine "double-feathery crest, edged with purple," which crowns its head and extends even over its beak. The wings and tail have long plume-like feathers, which are very ornamental.

Though named "Cock of the Woods," and by the Spaniards "Gallo del Rio Negro," and even placed by Waterton among the "gallinaceous tribe," this handsome bird has no affinity to poultry. It is truly one of the *Passerine* birds. Waterton, who often saw it in the interior of Demerara, amongst the vast forests of Macoushia, tells us that it passes the day in the midst of gloomy damps and silence, and, as far as his observation went, issued from its recesses in search of food at sunrise and sunset, soon retreating*. It is an unsocial bird, never mingling with the feathered inhabitants of the forest.

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* Letter to Mr. Gosse—'Birds of Jamaica,' p. 202.

Mr. Goudot† describes the nest of the 'Cock of the Rock' as being formed in holes of steep rocks, close to water-torrents. It is composed of the filaments of roots, interlaced, and in the lower part mingled with earth or clay.

When on the Rio Negro in November, 1850, Mr. Wallace went in search of this fine bird, and describes, in his very interesting travels, the mountainous thickets it inhabits. It was some time before an old Indian caught hold of his arm, and, pointing to a dense thicket, whispered gently, "Gallo!" He says: "After looking a little while, I caught a glimpse of the magnificent bird, sitting amidst the gloom, shining out like a mass of brilliant flame." As the bird is easily frightened, it required some following and perseverance before he shot it. One of the Indians went down the deep rocky gully into which it fell, and brought it to him. He may well say, "I was lost in admiration of the dazzling brilliancy of its soft downy feathers; not a spot of blood was visible, not a feather was ruffled, and the soft, warm, flexible body set off the fresh swelling plumage in a manner which no stuffed specimen can approach*." Our traveller staid at the place; and, with the help of his twelve hunters, he obtained twelve of these birds, having shot two himself. Two were brought to him alive: one of these was kept by the Indian who caught it, but it died in a few weeks after. He describes them as being snared at the spots visited by the males as playing assemblies. These places are worn quite smooth with the constant tread of their feet. Two or three males meet on a rock or at the root of a tree, and perform a kind of dance. Mr. Wallace says that the females and young, which are of a plain reddish-brown, are never seen in these places; but only full-grown fine-plumaged males are met with in these nuptial displays of this handsome South American bird-dandy†.

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* Wanderings in South America, pp. 107 and 34.

† Revue Zoologique, 1843, p. 1.

In beautiful contrast with the South American *Rupicola* is the green *Calyptomena*, discovered by Sir Stamford Raffles in Java. It is closely allied to its orange cousin in form and habits, but has not the head-feathers disposed like a fan. The only known species is found in Java, and perhaps other islands of the Indian Archipelago. It is described and figured by Dr. Horsfield in his 'Zoological Researches in Java' (*Calyptomena viridis*).

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* Alfred A. Wallace: 'Travels on the Amazon and Rio Negro,' p. 222.

† *Ibid.* 227.

The Manakins (*Pipra*) are prettily-plumaged birds, found in South America. The colours of the various species are generally in strong contrast,—red head, blue back, and black body; or, yellow-capped head and black body. In some of the species the tail-feathers end in a long thread-like process. In the forests where these birds are found, their activity and lively plumage must render them very attractive objects.

The Shrikes are an extensive family of birds (LANIIDÆ), resembling in appearance, at first sight, some of the hawks. They are however in all respects *Passerine* birds, though in the nature of their appetite they bear some resemblance to the members of that predaceous family. Some of the species have the habit of sticking the insects they capture on thorns; others are not content with insect food, but supplement it with small birds, and even mice or shrews, which, like "butchers,"—a name often applied to them,—they tear to pieces and devour. The *Lanius collaris*, a species found at the Cape of Good Hope, is there called, according to Dr. Smith, the *Fiscal*, from its habit of impaling such reptiles and small birds as it is able to destroy. "When thorns do not occur for this purpose, it contrives to suspend them from the forked branches of trees; thus seeming, to the fancy of the Dutch, to hold among the lower orders of the creation the same place as the Government officer, called the Fiscal, formerly held among the colonists*."

The eyes in some birds of this family are surrounded by a membranous ring, void of feathers; the edges of this are more or less notched. Vieillot has described the genus under the name of *Prionops.* There are at least three species of these birds: one, the *P. Talacoma,* a black-and-white bird, was found by Dr. Andrew Smith in the interior of South Africa, where he observed it in flocks of six or eight. The stomachs of all the specimens he examined were full of white ants, and he was led to think that these *Termitidæ* formed their favourite food. The birds utter their cries simultaneously when searching the ground for food; and, when one of a flock is induced to fly, the others follow the example†. It seems probable that these insects are closely connected with the search after their food. White ants, when found, are in great abundance; and the bird's sociability has no tendency to diminish the supply of the flock.

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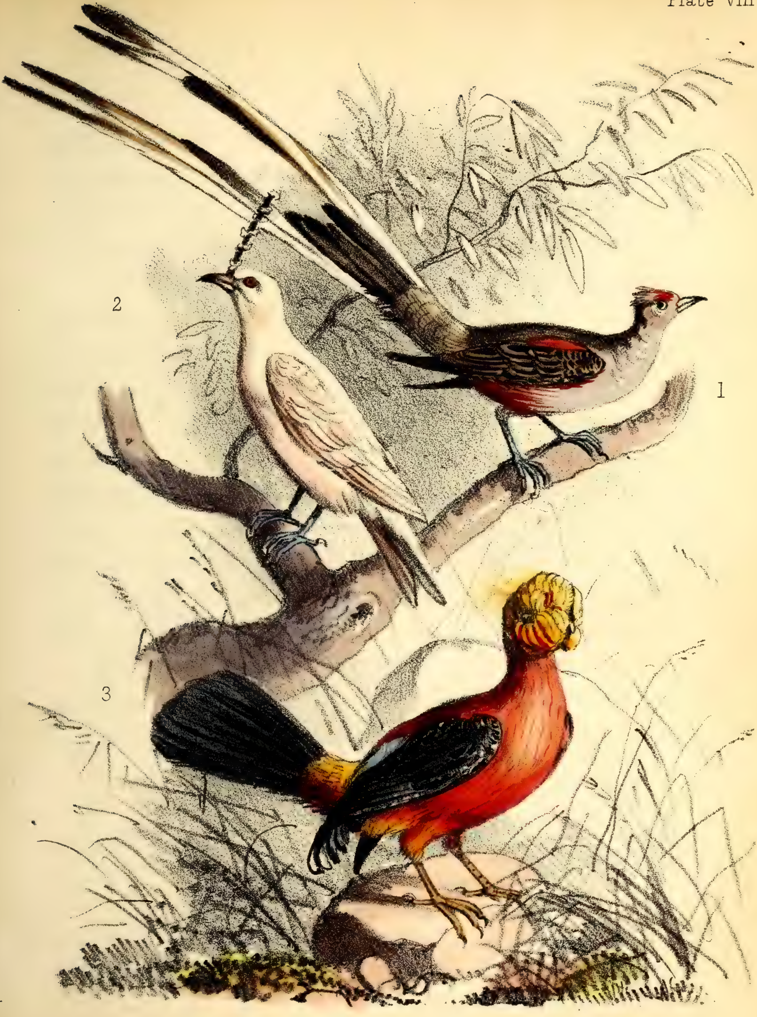
* Catalogue of South African Museum, p. 27.

† Illustrations of the Zoology of South Africa.



Bauerrichter & C? lith.

1. Milvulus forficatus. 2. Procnias carunculata. 3. Rupicola Peruviana.

Allied to the shrikes, and connecting them with the crows, are the Piping Crows of Australia (*Gymnorhina*). These are pretty black-and-white birds, with longish bills, famed for their singular choral-like notes. Mr. Gould says that few of the birds of Australia are more ornamental than the piping crows, as they give a very animated appearance to the open plains and grassy downs, which they traverse when pursuing grasshoppers and other insects, their chief food. Their nests are open and cup-shaped, and formed of sticks lined with grass or other softer substances. It is curious to hear one of the specimens in the Zoological Gardens piping its song, which seems to be of a definite length, and which *must* be played out. Allied to the Piping Crows are the *Streperæ* of the same country, which derive their name from their shrill cry when flying. These birds, when their natural food of grasshoppers and other insects gets scarce, betake themselves to the cultivated grounds of the colonist, and occasionally commit considerable ravages on his crops and on his fruit: in some parts of Australia and in Tasmania they are shot as an article of food, and are reckoned delicate eating*. These two genera, with the allied form *Cracticus*, seem to form connecting links between the shrikes and the crows, partaking of the habits of both. The species of *Cracticus* often add small quadrupeds, birds, and lizards to their insect prey, and not unfrequently impale what they catch, after the manner of the butcher-birds.

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* Gould's 'Birds of Australia.'

The bird known to resident Europeans in India as the "King Crow," and to naturalists as the *Dicrurus balicassius*, is a species of Forked-tailed Shrike. Mr Jerdon* has given us some particulars of its history: in Hindustan it is usually called *Kolsah;* this bird is everywhere met with in the open country and in wooded districts, where it "may be seen perched on a tree or hedge, the top of a low bush on the plain, or a stack of grain—frequently also on the top of a wall or old building, the bank of a paddy-field, or even a clod of earth or ant-hill—and it is by no means uncommon to see one on the back of cattle, sheep, or goats, while grazing." In such positions the forked-tailed shrike patiently waits till an insect comes within its vision; the bird immediately flies to the place where the grasshopper or other insect has alighted, and returns to its perch with its prey, which it devours at leisure. Should the insect fly, the bird pursues it closely, and either snaps it on the wing or immediately after it has alighted. When the winged white ants (*Termi-*

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* Madras Journal, vol. x. p. 238.

tidæ) issue from their nests at the bottom of a tree or hedgerow, many of these birds, associated with the Mina Grakle, assemble as to a feast. The name "King-crow," given to this bird, has been acquired from its habit of following crows with great clamour and perseverance, and every now and then pouncing on them. Mr. Jerdon informs us also that this is the first bird whose song is heard in the morning: it commences often long before sunrise, and he has heard it on moonlight nights singing and chuckling. The bird is sometimes tamed, and taught to perch on the head or hand of its master, from which it will fly down after any insect.

One species, the Racket-tailed Drongo Shrike (*Dicrurus retifer, L. Malabaricus,* Shaw), is also, according to Mr. Jerdon (*l. c.* 241), occasionally tamed. In former times this bird was not unfrequently caught, and sold for a high price at Hyderabad. It is said to resemble the mocking-bird in its imitative propensities, and has hence acquired the name of "Huzar Dustan," or "bird of a thousand tales."

Conirostres.—This third great group of the Passerine birds is distinguished by the beak being stout and conical, and for the most part without a notch at the end. The Crows, Birds of Paradise, Orioles, Starlings, and Finches are comprised in it; while the Plantain-eaters and Hornbills seem to connect it with the Climbing Birds, forming the order SCANSORES.

The Crow family, CORVIDÆ, of which the Jackdaw, Magpie, Jay, and Cornish Chough are familiar British examples, is characterized by the beak being strong, more or less lengthened and compressed, and the nostrils generally covered with bristly hairs, directed forwards. The birds are decidedly omnivorous; and in such of them as find their food in carrion, the powers of smelling are very considerable, and their eyes are particularly quick-sighted. The whole family are apt to carry off to their nests any bright articles which may come in their way, however useless they may be to them. The general colouring of the family is sombre, though some of the groups, such as the jays (*Garrulinæ*), are very brightly and often gorgeously clad. The species of the crow family are possessed of long, pointed, and powerful wings; their legs and toes are strong and well scaled. Some of the species, such as the rook (*C. frugilegus*), live together in great flocks, and nestle in society; while others, such as the raven, are solitary in their habits.

> "He belong'd, they did say, to the witch Melancholy!
> Blacker was he than blackest jet—
> Flew low in the rain, and his feathers not wet!"—*Coleridge.*

Wilson describes the American crow, a species closely allied to ours (*C. Corone*), as being easily domesticated; he says that "it is only when thus rendered unsuspicious of man, and placed on familiarity with him, that the true traits of his genius and native disposition fully develope themselves. In this state he soon learns to distinguish all the members of the family; flies towards the gate, screaming at the approach of a stranger; learns to open the door by alighting on the latch; attends regularly at the stated hours of dinner and breakfast, which he appears punctually to recollect; is extremely noisy and loquacious; imitates the sound of various words pretty distinctly; is a great thief and hoarder of curiosities, hiding in holes, corners, and crevices every loose article he can carry off, particularly small pieces of metal, corn, bread, and food of all kinds; is fond of the society of his master, and will know him even after a long absence."

Among the prettiest of our British birds are the common Magpie and the Jay, two species which are in many places mercilessly persecuted. The sight even of the former is deemed by many as auguring "ill luck." Mr. Waterton however has extensively patronized them around his mansion in Yorkshire, and has given, in his 'Essays on Natural History,' a curious account of their services as watchmen.

He says :—"Whenever I hear it during the night, or even during the day (except towards nightfall), I know that there is mischief on the stir. Three years ago, at eleven o'clock in broad day, I was at the capture of one of the most expert and desperate marauders that ever scourged this part of the country. He had annoyed me for a length of time, and was so exceedingly cunning that, when we went in pursuit of him, he always contrived to escape, either by squatting down in the thick cover of the woods, or by taking himself off in time, when he saw us approach. At last he owed his capture to the magpies. We were directed to the place of his depredations by the incessant chatterings of these birds in the tops of the trees, just over the spot where he was working in his vocation. He had hanged fourteen hares; and the ground was so covered with brambles and brushwood that when we surprised him, he told us that we never should have found him had it not been for the magpies." Such a service may well atone for transfixing a few hens' eggs with its beak, or destroying a little unprotected fruit—acts which it occasionally is guilty of—not to mention its great utility to man in destroying many noxious insects.

The Canadian Jay (*Garrulus Canadensis*), familiarly known to the fur-traders by the curious name of "Whisky-

Jack," although, as Sir John Richardson remarks, it has nothing pleasing in its voice, plumage, form, or attitude, is hailed with delight as one of the inhabitants of the pathless forest, which fearlessly approach man. Like the rest of its tribe, it collects berries, and pieces of meat and fish, which it hoards in the hollows of trees; and it is thus enabled, according to Mr. King*, to pass the winter in comfort, and rear its young much earlier than any other birds of the fur countries. Mr. King says that it was a constant attendant of his party in their walks and encampments; and such was its familiarity that, as soon as a fire was lighted, it made its appearance, to feast on the morsels of pemmican or fish that escaped the attention of the dogs. Sir John Richardson speaks of its becoming so tame in winter as to eat from the hand; and yet, so impatient is the bird of confinement, that, if put in a cage, it soon pines away.

Another species of Jay (Plate IX. fig. 1, *Garrulus cristatus*), the Blue Jay, a native of the woods of North America, is described by Wilson as quite a beau among the wood-birds, from the brilliancy of its plumage. This species is a great mimic, and has a voice capable of going through a great variety of modulations. Mr. Bartram, in a letter to the American ornithologist*, points out this bird as "one of the most useful agents in the economy of nature, for disseminating forest-trees, and other nuciferous and hard-seeded vegetables on which they feed. Their chief employment during the autumnal season, is foraging to supply their winter stores. In performing this necessary duty, they drop abundance of seed in their flight over fields, hedges, and by fences, where they alight to deposit them in the post-holes, etc. It is remarkable what numbers of young trees rise up in fields and pastures after a wet winter and spring. These birds alone are capable, in a few years' time, to replant all the cleared lands."

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* Narrative of Journey to the Shores of Arctic Ocean in 1833–35 with Captain Back, vol. ii. p. 123.

Among the numerous islands of the Rio Negro, Mr. Wallace fell in with a very curious bird of this family, called the "Umbrella-bird" (*Cephalopterus ornatus*). It is about the size of a raven, and, like it, is black; the male in particular has a singular crest on its head, "formed of feathers more than two inches long, very thickly set with hairy plumes, curving over at the end. These can be laid back so as to be hardly visible, or can be erected and spread out on every side, forming a hemispherical dome, completely covering the head, and even reaching beyond the point of the beak."

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* Quoted in 'American Ornithology,' vol. i. p. 259.

Mr. Wallace very aptly compares the individual feathers as standing out something like the down-bearing seeds of the dandelion, so familiar to every child as "floral clocks." On the breast there is another appendage, "formed by a fleshy tubercle, as thick as a quill, and an inch and a half long, which hangs down from the neck, and is thickly covered with glossy feathers, forming a large pendent plume or tassel. Like the gorget of the cock, this can be pressed close to its breast, so as to be scarcely visible, or can swell out so as almost to conceal the fore part of its body*." In the female the crest and neck appendages are not so much developed. Mr. Wallace says that the umbrella-bird is confined to the flooded islands of the Rio Negro and the Solimões, and never appears on the mainland. In Sir R. Schomburgk's Guiana collection was a fine specimen, now in the British Museum. Mr. Wallace reports it as feeding on fruits, and as uttering a loud hoarse cry, like some deep musical instrument; whence its Indian name *Ueramimbé*, or "Trumpet-bird." The birds are not uncommon; but from being very shy, and from perching on the highest trees, and being very muscular, are not easily brought down. On the day before Mr. Wallace returned to Barra a fine male

* Wallace's 'Travels on the Amazon and Rio Negro,' pp. 169, 173.

was brought to him alive. This specimen had been wounded slightly in the head, but it soon became very active. He put it in a large wicker basket; but as the creature was, not without reason, in a great pet, it refused to eat. Mr. Wallace fed it for two days by thrusting pieces of banana down its throat. He found an acid fruit, about twice the size of a cherry; this he gave it, and the fruit was readily taken and swallowed whole. This interesting bird died soon after, but not before giving our traveller ample opportunities of observing its habits, and more especially its manner of opening and closing its crest and neck-plume.

The Birds of Paradise (PARADISEIDÆ) form a limited family, connecting the crows and starlings, and pre-eminently distinguished by the gorgeousness of their plumage. They are large-beaked and large-footed birds, which are said to live in considerable flocks in New Guinea and other islands to the north of New Holland. There are few naturalists who have seen them alive. Mr. Bennett, in his 'Wanderings in New South Wales,' etc.*, mentions a live specimen of the *P. apoda* (Plate IX. fig. 3) which he saw at Macao, in the aviary of Mr. Beale, where it had been kept for nine years, and where its occasional caw and "resounding note of *whock,*

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* Vol. ii. pp. 36–48.

whock, whoek," soon attracted the visitor's attention. He describes it as having "a light, playful, and graceful manner, with an arch, impudent look," appearing delighted to be noticed. During four months of the year this specimen moulted, from May to August. In its ablutions it was most careful, washing itself twice a day. Mr. Beale fed it on boiled rice mixed up with soft egg, together with plantains. It was very fond of grasshoppers, which, when thrown to it, it contrived to catch in its beak with great ease: this specimen refused to eat insects when dead. Gaily as this Bird of Paradise was dressed, even in confinement he did not allow his feathers to be soiled, but preened himself with the utmost care, inspecting every part of his plumage which was within reach.

Wordsworth* has well expressed the character of the plumage in the Greater Bird of Paradise:—

"So richly deck'd in variegated down,
Green, sable, shining yellow, shadowy brown,
Tints softly with each other blended,
Hues doubtfully begun and ended;
Or intershooting, and to sight
Lost and recover'd, as the rays of light
Glance on the conscious plumes touch'd here and there.

. . . .

This the Sun's Bird, whom Glendoveers might own
As no unworthy partner in their flight

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* Poems, chiefly of Early and Late Years, pp. 89, 90.

> Through seas of ether, where the ruffling sway
> Of nether air's rude billows is unknown;
> Whom sylphs, if e'er for casual pastime they
> Through India's spicy regions wing their way,
> Might bow to as their Lord."

This species acquired its specific name of *apoda*, or "the footless," from the skins having been formerly sent to Europe without the legs. They were procured from the natives, who, to enhance the value of the birds, described them as being destitute of legs, and as continually flying about in the air. Tennyson, in the epilogue of the 'Day-dream,' alludes to

> "long-tail'd Birds of Paradise,
> That float through Heaven, and cannot light."

In the Arru Islands the Birds of Paradise form an article of traffic: the natives shoot them with blunt arrows, so that they are stunned without having their plumage injured. The skins, when dried, are sold to the traders at one rupee each. Captain Stokes says the natives describe them as keeping together in flocks, directed by one of their number, called the "Rajah-bird," whose motions they follow*.

Many species are known, but others seem still to remain in these little-visited islands to reward the researches of naturalists. Mr. Cassin has described a new species, lately obtained by Mr. Wilson, of Lydstip. In some of the islands of the East, the feathers are said to be worn by the chiefs in battle as a talisman.

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* Discoveries in Australia, vol. i. p. 464.

The Starling family (STURNIDÆ) is widely distributed, and contains many birds of curious habits. One of the most curious observations made by Mr. Gould in Australia was, that two birds, not uncommon there, construct curious "bower-like structures, for the purpose of a playing-ground, or hall of assembly." These two birds, named the *Satin Bower-bird* and the *Spotted Bower-bird,* collect together sticks, and arrange them in a regular form. The bower of the spotted bower-bird (*Chlamydera maculata*) is much longer than that of the satin bower-bird, and more nearly resembles an avenue. It is outwardly built of twigs, and is lined with tall grasses, so arranged that the tops nearly meet. The birds bring together considerable quantities of stones, and shells, and bones, which serve to keep the structure steadily moored: these "pavements" extend in a heap before the entrance at each end. The birds have an evident eye for ornament, for here and there they intermingle with the grass and sticks the brightly-coloured tail or wing-feathers of parroquets, and, in the selection of bones and shells, seek for those which are bleached white by the sun. Mr.

Gould ascertained that these runs formed the rendezvous of several individuals; for, by carefully watching, he killed two males, which he had previously seen running through the avenue. This bird is an inhabitant of the interior of the country, and derives its generic name, *Chlamydera*, from the beautiful band of lengthened rose-pink feathers which cross the back of the neck, and form a broad fan-like crest. Mr. John Macgillivray, when naturalist of H.M.S. Rattlesnake, discovered the bower of another species at Cape York*, and sent it to the British Museum. It was four feet long and eighteen inches high, and had some fresh berries lying upon it, and was situated on the border of a thicket. Having landed with a board to get this bower, he watched its wary constructor for some time, and at length got some glimpses of it. He saw the bird enter the bower, and firing through the twigs killed it. Mr. Gould described the bird as a new species (*C. cerviniventris*). Plate XI. fig. 2 shows this bird and its bower.

The satin bower-bird (*Ptilonorhynchus holosericeus*) (Plate XI. fig. 1, bird and bower) has been long known to naturalists. The plumage of the adult male is of a deep satiny blue-black, while the females and young have the upper parts of a greyish-green; the under parts are lighter-coloured, each feather having a brown crescent-shaped spot near the end. Like the *Chlamydera,* this bird seems to live exclusively on grain, berries, and figs. Its curious bower-like structures are generally placed under the shelter of the branches of some tree, in a retired part of the forest. In December, 1851, we saw a young male of this species in the Zoological Gardens; it flew and hopped about, and seemed to be very shy. We observed it take up several straws in its beak, keeping them together and taking each up separately; the bower-bird broke off a twig from a decayed bush in the aviary, and placed it in its bower, which, when we observed it, was by no means in a very symmetrical state. The manners of this bird seemed to us to resemble those of the jackdaw; and, like that bird and the magpie, it seems to have a love of securing and secreting anything that is bright.

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* Narrative of the Voyage of H.M.S. Rattlesnake, vol. i. p. 323.

Many of the birds of the family *Sturnidæ* build remarkably beautiful pensile nests. One of the most skilled of these is the Baltimore-bird of the United States, where it is often called 'hang-nest' and 'hanging-bird,' from its well-known structures. The American ornithologist speaks in high terms of the warmth, security, and convenience of the Baltimore-bird's nest: he says that the bird "generally fixes on the high bending extremities of the branches, fastening strong strings of hemp or flax round two forked twigs, corresponding to the intended width of the nest; with the same materials, mixed with quantities of loose tow, he interweaves or fabricates a strong firm kind of cloth, not unlike the substance of a hat in its raw state, forming it into a pouch six or seven inches in depth, lining it substantially with various soft substances, well interwoven with the outer netting, and lastly, finishes with a layer of horsehair; the whole being shaded from the sun and rain by a natural pent-house or canopy of leaves*." Wilson found that these birds do not all build exactly in the same manner; he tells us that as much difference may be found in the style, neatness, and finishing of the nest as in their voices, some appearing to be far superior workmen to others. The Baltimore oriole, during the season of building, is so solicitous to procure proper materials for its nest, that "the women in the country are under the necessity of narrowly watching their thread that may chance to be out bleaching, and the farmer to secure his young grafts; as the bird, finding the former, and the strings which tie the latter, so well adapted for his purpose, frequently carries off both. . . .

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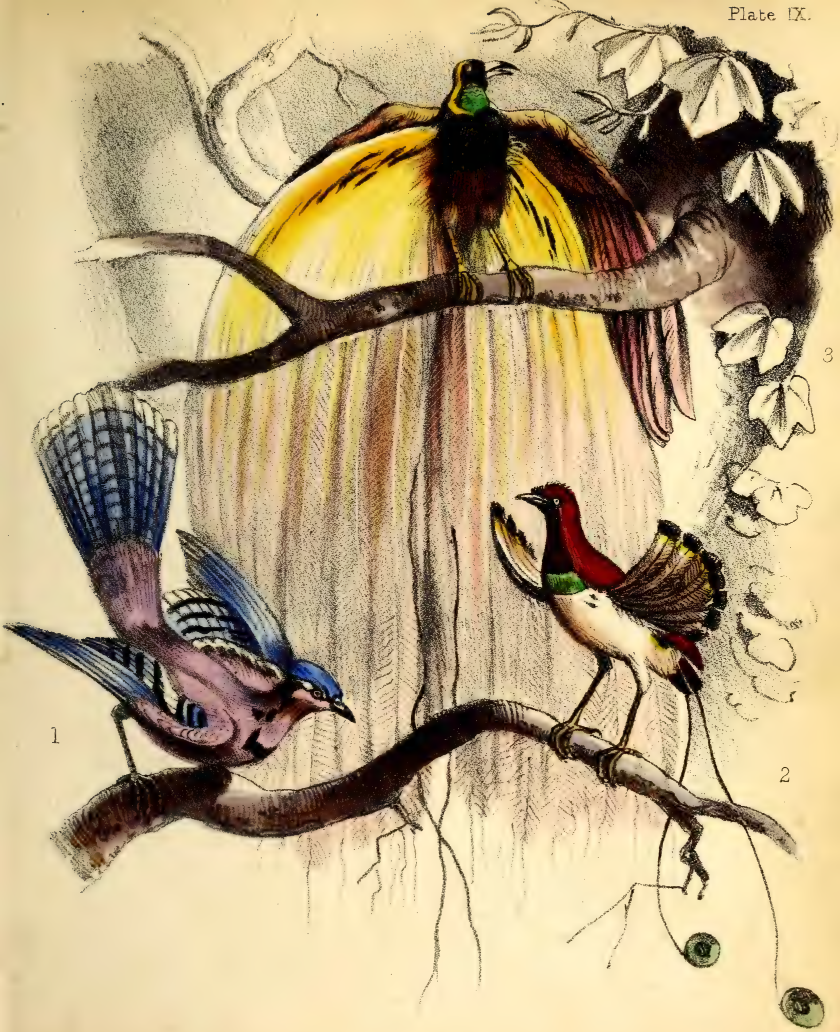
* American Ornithology, vol. i. p. 179.



Bauerrichter & C° lith.

1. Garrulus cristatus. 2. Cicinnurus regius. 3 Paradisea apoda.

Skeins of silk and hanks of thread have been often found, after the leaves were fallen, hanging round the Baltimore's nest, but so woven up and entangled as to be entirely unreclaimable." Mr. Wilson adds, that the strongest and best materials are invariably found in those parts which support the nest.

Dr. Andrew Smith discovered, in the interior of South Africa, a new species of *Textor* (*T. erythrorhynchus*), the habits of which are curious. It was always found either perched on the back of a buffalo, or flying over a herd of them. At first Dr. Smith gave it the name of Buffalo-bird (*Bubalornis*), and well it deserves the English name at all events ; for, not only by feeding on the parasitic insects of the big quadruped's hide, does the blackish-brown bird, with the thick yellowish-red bill, rid the buffaloes of a nuisance, but he acts the part of a sentinel. "On observing any unusual appearance in the neighbourhood, its attention is immediately directed to it ; and, if alarm is eventually excited, the bird flies up, upon which all the buffaloes instantly raise their heads, and endeavour to discover the cause which had led to the sudden departure of the sentinel. If they are successful in the attempt, and see reason to fear for their own safety, they take to flight in a body, and are accompanied by the birds who forewarned them of their danger*." Dr. Smith adds, that he never found this bird on any other quadruped than the buffalo, though in the same districts two birds of similar habits are found (*Buphaga Africana,* and *B. erythrorhyncha*), which however restrict their visits exclusively to the rhinoceros. Dr. Smith found the buffalo-bird to the northward of the 25th degree of south latitude.

The common Myna of India (*Pastor tristis*) is also one of the Starling family; and, like many of the group, is fond of keeping near cattle, following them as they graze, and getting the grasshoppers and other insects disturbed by their feet. Mr. Jerdon describes it (Madras Journal, xi. p. 21) as roosting in numerous flocks, generally on high trees, and dispersing about sunrise in small parties. Like our starling, its breeding-places are various, such as about old buildings, or in the holes of old trees and walls. Its notes are generally harsh, loud, and disagreeable, but some of them are sweet; and, from its aptitude as "a scholar," it is not unfrequently caught when young, and caged and taught to repeat words and sentences. The Myna is one of the first birds in India that attracts a stranger's attention.

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* Illustrations of the Zoology of South Africa, pl. lxiv.

One of the first birds a stranger notices in Jamaica, according to their historian, is the Tinkling Grakle (*Quiscalus crassirostris*). His fine glossy plumage and considerable size attract attention, added to his active habits and very peculiar cry, which Mr. Gosse compares to the sounds produced by repeatedly striking with force a piece of sonorous metal, occasionally mingled with a creaking, like that of a schoolboy's pencil on a slate. It is a gregarious bird, but does not associate in very great numbers; it walks much like the rook, and is similarly engaged with that bird when on the ground, searching after worms and grubs, on which it chiefly feeds. Like some other members of the family to which he belongs, he is fond of the parasites found on cattle; and is frequently to be seen on the backs of cows, picking off the ticks, and in this way renders essential service to the poor beasts, who appear to be grateful to their kind friends. He is very wary however of the human race: "only show your person," says Mr. Gosse*, "and you see the singular-looking white eye turned up towards you; stir a step towards him, and away he flies, uttering his very peculiar cry, his long tail folded on itself, and resembling a vertical fan." It would seem occasionally to eat fruit, and even to suck the nectar of flowers; but Mr. Gosse says this seems only to be done to quench its thirst.

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* Birds of Jamaica, p. 218.

The Tinkling Grakles roost in society, as many as four or five hundred congregating on adjoining trees, and, before settling in their places for the night, a good deal of jostling occurs; during this process their voices may be heard. Gosse compares the noise made to that which would arise from two or three hundred small table-bells of various tones all ringing at the same time. The nests are built together to the number of twenty or thirty, and are deep and compact, and placed on the forks of branches of trees, at a considerable height from the ground.

About Pará, the only brilliantly-coloured bird which may be regarded as very common, is the Yellow Troupial (*Cassicus icteronotus*). Mr. Wallace* describes it there as being very abundant, and as forming quite a feature in the landscape. It builds its nest in colonies, and suspends this long, purse-like nest, so familiar an object in every museum, from the ends of the branches of trees. The sight of so showy a black-and-yellow bird, flying in and out with unceasing diligence, must be very gratifying to one who has just landed on a new continent.

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* Travels on the Amazon and Rio Negro, p. 15.

The family FRINGILLIDÆ is composed of birds which are generally of small size. They have a short, thick, powerful bill, well fitted for cracking seeds; some of the groups having on the palate of the upper mandible a strong bony projection, to aid them in breaking the hard cases in which seeds are often enveloped.

Though the generality of birds prefer to be solitary in the placing of their nests, there are notable exceptions. Rooks, sand-martins, and gulls may be instanced as three familiar examples. In South Africa however there is a far more striking instance in a member of this family, the Sociable Grosbeak (*Philetærus socius,* Plate X. fig. 1), the habits of which have been recorded by Patterson, Daniel, and other travellers in the country to the north of the Cape. As the last and best account, we extract from the admirable work of Dr. Andrew Smith* part of his condensed observations on the habits of this bird. He writes :—"When a nestling-place has been selected, and the operation of building the nests is to be commenced *ab initio,* the community immediately proceed conjointly to construct the general covering which interests them all; that being accomplished, each pair begins to form their own nest, which, like the roof, they construct of coarse grass; these are placed side by side against the under surface of the general covering; and, by the time they are all completed, the lower surface of the mass exhibits an appearance of an even horizontal surface, freely perforated by small circular openings.

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* Illustrations of the Zoology of South Africa, pl. viii. (*Philetærus lepidus,* Smith; *Loxia socia,* Lath.)

"They never use the same nests a second time, though they continue for many years attached to the same roof. With the return of the breeding season, fresh nests are formed upon the lower surface of those of the previous year, which then form an addition to the general covering. In this manner they proceed, year after year adding to the mass, till at last the weight often becomes such as to cause the destruction of its support, upon which a new building-spot is selected. They appear to prefer constructing these nests upon large and lofty trees; but, where such do not occur, they will even condescend to form them upon the leaves of the arborescent aloe, as occasionally happens towards the Orange river.

"The commencement of the roof is firmly interwoven with the branches of the trees to which it is intended to be suspended; and often a great part of a principal branch is actually included within its substance." Dr. Andrew Smith concludes his interesting history by telling us that the males of this bird, unlike the males of the allied genus *Euplectes*, have no summer tints which they throw aside in winter. The female lays three or four eggs of a bluish-white colour, freely mottled at the blunt end with small brown spots. Seeds, and occasionally small insects, form their food.

A finely illustrated monograph of the *Loxia* family was published in 1850 by Charles Lucien Bonaparte and Schlegel, in which are figured the curious Crossbeaks (*Loxia*), which feed exclusively on the seeds of the fir tribe of trees; their crossed beaks, when open and fixed against resinous cones, press against them, which soon breaks them up, and allows the dexterous bird to get at the nutritious seeds within. The males of these birds, in their spring plumage, which is more or less bright red, with dark wings and tail, the former barred with white, must very much decorate the sombre trees on which they live, and give animation to the dreary northern or alpine situations in which they are found. A bright-looking linnet, the male of which has a pinky-red plumage (*Carpodacus Sinaicus*), was found by Hemprich and Ehrenberg among the solitudes of Sinai, which, if it resembles its cousin, our sprightly linnet, this pretty bird must often make cheerful to the wandering Arab by its song. The dreary poplar-woods of Eastern Siberia are rendered less melancholy by pleasant-looking rosy and grey-bodied linnets, with a yellow beak, white wing, and long black tail (the *Loxia Sibirica* of Pallas*).

The Linnets, generally sombre in plumage, are light-hearted birds, cheering many an otherwise dreary spot in America, Europe, and Asia with their note; the males acquiring in the spring rosy hues, which are 'sweetly pretty,' the crown of the head in some species, and also a large mark on the breast, being of a carmine colour.

One of the most beautifully coloured of the genera of the Finches is the *Poephila,* a native of the grassy beds of the open plains of Australia, where several species are found. As the name implies, the species feed chiefly on the seeds of the various grasses which grow in their haunts; the bill is nearly as deep and broad at the base as it is long; the tail is wedge-shaped, the two middle feathers being much longer than the others.

Mr. Macgillivray wrote to me the following note on this prettiest of the finches (Plate X. fig. 3) before he sailed for the Figi group:—

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* *Pyrrhula longicauda,* Temm., Gould, 'Birds of Europe.' *Uragus Sibiricus,* Bon. and Schlegel, p. 30, t. 35.

"*Poephila mirabilis,* Hombr. and Jacq., originally discovered at Raffles Bay, and afterwards found in other parts of the Cobourg Peninsula, is specifically identical with Gould's *Poephila Gouldiæ.* I once found a large flock of this bird in the neighbourhood of Coral Bay (near Port Essington), feeding on the seeds of grass, and taking to the high gum-trees on being approached. No two individuals agreed in plumage; the majority however were immature birds. Others, with red heads, had a few black feathers mixed up with the rest; and black-headed individuals had a few scattered red feathers; in short, the two supposed species were mixed up together. This bird is not a constant resident in the Cobourg Peninsula; and, since its discovery in 1833 by the French, had not been observed there until about 1845, when it appeared in great flights, and remained for a few weeks only."

Sir John Richardson thus pleasingly alludes to the song of a species of the finch tribe, which he heard in the Arctic parts of North America on his late searching expedition after Sir John Franklin:—"Constantly, since the first of June, the song of the *Fringilla leucophrys* has been heard day and night, and so loudly, in the stillness of the latter season, as to deprive us at first of rest. It whistles the first bar of 'Oh dear, what can the matter be!' in a clear tone, as if played on a piccolo fife; and though the distinctness of the notes rendered them at first very pleasing, yet, as they haunted us up to the Arctic Circle, and were loudest at midnight, we came to wish occasionally that the cheerful little songster would time his serenades better. It is a curious illustration of the indifference of the native population to almost every animal that does not yield food or fur, or otherwise contribute to their comfort or discomfort, that none of the Iroquois or Chippeways of our company knew the bird by sight, and they all declared boldly that no one ever saw it. We were however enabled, after a little trouble, to identify the songster, his song, and breeding-place. The nest is framed of grass, and placed on the ground, under shelter of some small inequality; the eggs, five in number, are greyish or purplish-white, thickly spotted with brown; and the male hides himself in a neighbouring bush while he serenades his mate*." So much for the difference between "eyes and no eyes"!

Some of the finches found by Mr. Darwin on the Galapagos are remarkable for the great thickness and hardness of their beak. They form the genus *Geospiza* (Plate X.

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* Arctic Searching Expedition, vol. i. p. 78.

fig. 2): the tail is short, the general colour of the plumage in the female is grey or brown, while the adult males are jet black; they feed in flocks on the ground. Mr. Darwin* has seen one of these thick-billed finches picking at the end of a piece of cactus, while a large lizard (*Amblyrhynchus*) was eating at the other; and so little afraid was the bird, that it afterwards hopped on the back of the reptile with the utmost indifference.

Mr. Gould, in the third volume of his 'Birds of Australia,' mentions a very curious fact connected with the nest-making of a pretty little finch which is abundant in New South Wales (Spotted-sided Finch, *Amadina Lathami*). This little bird builds the cradle of its young, and nurses its fledglings, not unfrequently among the large sticks forming the under part of the eyrie of the smaller species of eagles. What adds to the curiosity of the circumstance is, that both the finch and the rapacious eagle hatch and rear their progeny in harmony. Mr. Gould tells us, that at other times these birds build their nests on the leafy branches of a gum or apple tree; the nest is of large size, nearly spherical, and has a short pendent spout on one side, through which the bird gets access to the interior.

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* Journal, p. 471.

A pretty little finch (*Amadina castanotus*), belonging to the same genus with the last, frequently cheers the traveller through the desert parts of Australia. It is a gregarious species, and is met with in hundreds on bushes at no great distance from water, to which they regularly fly at sunset. Captain Sturt, the intrepid Australian discoverer, in his narrative speaks of this bird:—"Never did its note fall on our ears there but as the harbinger of good, for never did we hear this little bird but we were sure to find water nigh at hand, and many a time has it raised my drooping spirits and those of my companions, when in almost hopeless search for that, to us, invaluable element*."

Captain Parry found the Snow-bunting (*Plectrophanes nivalis*), during the spring of 1825, one of the first visitants to the neighbourhood of Port Bowen, where, with the crews of the Hecla and Fury, he had spent a monotonous winter, occasionally relieved by the appearance of a pair of ravens, the only winter resident of the order of birds. He refers, evidently with pleasure, to the snow-bunting's sprightly note†. Another Arctic voyager, Captain Lyon, who attempted, in H.M.S. Griper, to reach Repulse Bay in 1824, fell in with some Esquimaux graves: among them was a pile of stones covering the body of a child. "A snow-bunting," says that graphic writer, "had found its way through the loose stones which composed this little tomb, and its now forsaken, neatly-built nest, was found placed on the neck of the child. As the snow-bunting has all the domestic virtues of our English redbreast, it has always been considered by us as the robin of these dreary wilds; and its lively chirp and fearless confidence have rendered it respected by the most hungry sportsman. I could not on this occasion view its little nest, placed on the breast of infancy, without wishing that I possessed the power of poetically expressing the feeling it excited*."

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* Expedition into Central Australia, in 1844, 1845, 1846, vol. ii. app. p. 27.

† Third Voyage for the Discovery of a North-west Passage, p. 81.

Sir George Mackenzie too speaks with pleasure of the Snow-flake, and says that it is "the only bird in Iceland which can truly be said to attempt singing†." It must have been very gratifying to Lieutenant Brown, on the 5th April, 1851, when on a sledge-party to the desolate country south of Cape Walker, during the late search for the crews of the Erebus and Terror, to enter in his Journal that "two snow-buntings came hopping and chirruping round the tent, their cheerful notes recalling to our memories a more genial clime*." We can hardly enter into the joy experienced in so dreary a place by hearing such a sweet-noted and lively visitant.

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* A Brief Narrative, etc., by Captain G. F. Lyon, R.N.

† Travels in Iceland, second edition, p. 89.

The place of our skylark is somewhat supplied in Australia by two or three birds belonging to a genus called *Cincloramphus*. One of these (*C. rufescens*) is even named Singing Lark by the colonists: it often reminds them of the sweet soaring warbler, who, most frequently unseen, cheered them and its mate in days gone by. This bird spends much of its time on the ground, from which it mounts perpendicularly in the air; and then descending, flies horizontally from one tree to another, singing all the time with great volubility†. Another species of bird (*Mirafra Horsfieldii*) is still more like our skylark in form, and frequently mounts high in the air, singing most melodiously all the while.

There are other larks besides our famed species who take vertical flights into the air‡. Dr. Andrew Smith observed

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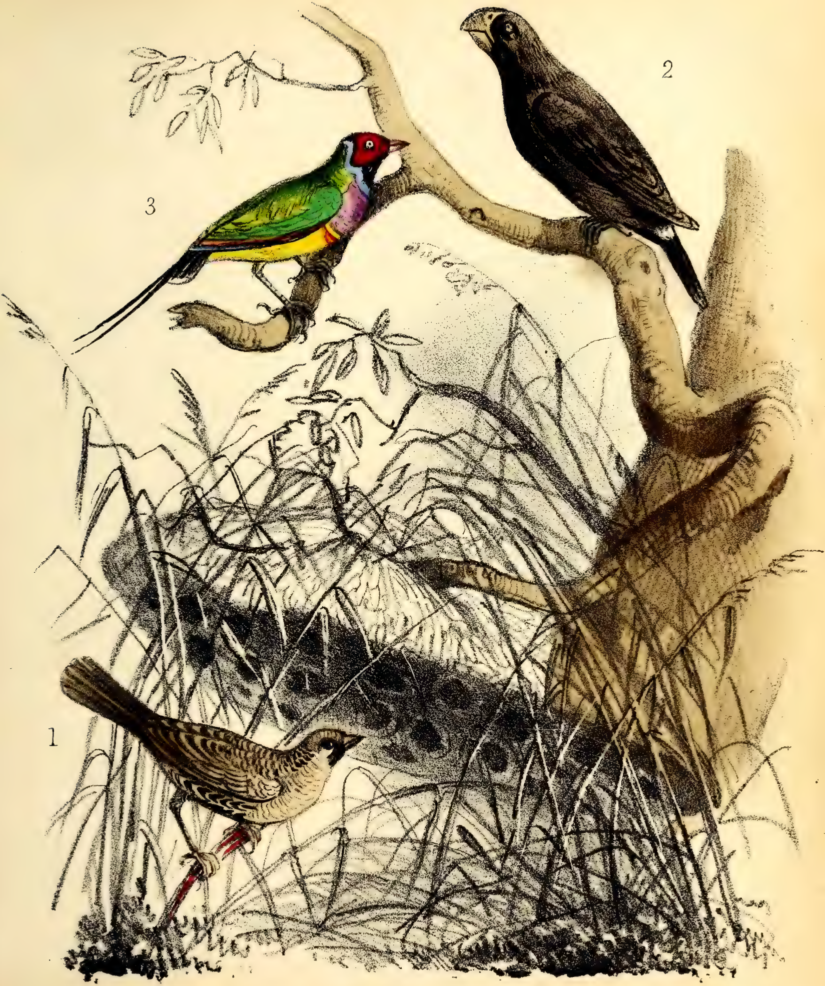
* Additional Papers relative to the Arctic Expedition, pp. 68, 69.

† Gould's 'Birds of Australia,' vol. iii.

‡ "And drown'd in yonder living blue,
The lark becomes a sightless song."
Alfred Tennyson, In Memoriam cxiv. 2.

Plate X.



Bauerrichter & C° lith.

1. Philetairus socius. 2. Geospiza magnirostris. 3. Poephila mirabilis

the *Mirafra Sabota,* a species found towards the tropic of Capricorn, to be fond of doing this; while the "Clapart Lewerk" of the Dutch colonists (*Brachonyx apiata*), a pretty species not unlike ours, is often seen on the sand-flats to the eastward of Table Bay, rising almost perpendicularly to a considerable height in the air, striking its wings together with considerable violence, and thus producing sharp sounds, to which it owes its Dutch name; it descends with equal straightness. The doctor also figures a lark (*Alauda ferruginea*) which whistles delightfully about sunrise, soaring into the air, though it is generally when seated on a bush that his musical powers are displayed.

The COLIDÆ, or Colies, consist of a few species of birds, natives of Africa and Asia, which have a short, conical, compressed beak; the tail feathers are long and graduated, and only ten in number; the hind toe, as in the swifts, can, at the will of the bird, be directed forwards like the other toes; their feathers are fine and silky, and generally of an ash colour. The colies are much attached to trees, about which they climb much after the manner of parrots; they are very sociable, flying from one tree to another in a long row; in climbing they are assisted by their beak and stiff tail: they feed chiefly on buds and berries; they are said to sleep suspended from a branch with their head downwards. The coly found at the Cape of Good Hope, from its grey colour and its habit of creeping up the branch, is commonly called the Mouse-bird (Plate X. fig. 4). This species is very destructive to the gardens in the Cape Colony, as it nips off the buds of fruit-trees and eats the young plants as they spring out of the ground; the note is monotonous, as the trachea is furnished with only one pair of vocal muscles. The bodies of the colies are more bulky than would be supposed, the feathers lying very close to the skin; the flesh is of delicate flavour.

The family MUSOPHAGIDÆ derives its name from the typical genus *Musophaga,* the Plantain-eater, a form of birds in which the base of the beak expands into a horny disc, covering part of the forehead. The name is applied to this African bird from the banana fruit forming its chief support. To the same family belong the Touracos (*Corythaix*), with their compressed bill and crest, and generally bright green colours, with some bright red or other fine contrasting colour on some part of their plumage. Another genus, named *Chizærhis,* contains African birds generally of a greyish or sombre plumage, with a rounded beak; by Linnæus, who knew them imperfectly, a species of this genus was regarded as a Pheasant (the *C. Africanus*).

The species of this family, as observed by the late Mr. Whitfield, in West Africa, frequent the dense brush, and when alarmed, but only then, raise their crests ; they are generally very inanimate. During the day they feed on bananas, or on the berries of the Christmas bush. While at the Gambia he found the grey species, which has no cry, and the lemon-cered species; the cere of this in preserved specimens is black, quite altering the fine contrast which the colours present when the bird is alive.

Mr. Whitfield, though for many years in West Africa, never saw their nest; but they are said to lay four delicate white eggs, in the hollows of rotten trees. One of the species is called the "Clock-bird," from a definite call which it utters four times a day; and as it is believed to announce eight o'clock in the morning, twelve o'clock at mid-day, four o'clock, and sunset, the fancy and the name are well applied. Mr. W. observed that the grey species fed for the most part on the ground.

Dr. Andrew Smith* fell in with a grey species (*Chizærhis concolor*) on the banks of a river in South Africa, in 25° 24′ south latitude. It was either perched on the highest branches of the trees, or flitted about among them in search of fruit. He observed that it was a bird of short flight, and, when at rest, "has a clumsy dull appearance, with its head sunk to its shoulders;" but, when excited, it looks very elegant and graceful, its usually recumbent crest being raised, and its head and body moving in all directions. Besides fruit, this bird must eat orthopterous insects, as the wings and other parts of *Grylli* were found in their stomachs. In this family the first and fourth toes are directed laterally, and, as befits birds feeding chiefly on fruits, the stomach is very large; some of the species are very shy, such as Burchell's Touraco (*Corythaix porphyreolopha*), from Port Natal, which, unlike some of the others, as Dr. Andrew Smith tells us, remains motionless when conscious of danger; and as, like the rest of the family, its usual position is parallel to the branch on which it rests, its generally green colour keeps it from being seen.

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* Illustrations of the Zoology of South Africa. (Birds, pl. ii.)

The Hornbills (Bucerotidæ) are African and Asiatic birds, generally of considerable size, with enormous beaks, toothed on the edge. The beaks are often surmounted by a protuberance, which, in many cases, is as large as the bill itself. S. Müller and Schlegel have published a monograph of them*, and described some new species. Müller tells us that the

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* In the great book on the Dutch possessions in the Eastern Seas.

Buceros Rhinoceros lives on trees, among hills of considerable elevation, and that it seems particularly sociable with its kind; for two are generally seen together, and, if one loses sight of the other, it may be heard crying "hŏk-hŏk," till its mate is found. The loud cry of this bird is chiefly heard in the morning and evening. It forms its nest in holes of trees, the female laying two white eggs.

The feathers of the Rhinoceros Hornbill, and also the beaks, are used as ornaments of their war-caps by the Kyans, one of the tribes of Borneo: the skin of the bird's neck is stretched so as to cover the framework of the cap. This is the largest and most common species about Sarawak. Mr. Low describes the rushing noise made by a hornbill, flying overhead, even though at a very great height, as being greater than that of any other large bird he had observed. The flight of the hornbill is steady, regular, and straight, like that of a crow. Their favourite places of residence are on the highest trees, on the most lofty mountains; but the fruit of a species of fig often tempts them to come down to the plains. Müller says they are fond also of a species of *Sideroxylon* and *Elæocarpus*. They are generally seen in small flocks of from three to six individuals*. We have seen hornbills in captivity: their dullness at Knowsley was in strange contrast with the liveliness of their neighbour, the toucan.

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* Low's 'Sarawak,' pp. 329, 396.

While at Nanning, a town about sixteen miles from Malacca, Mr. G. Tradescant Lay* saw a young Concave Hornbill (*Buceros cavatus*). The bill, though large, had not yet attained its full growth; nor had it yet the appendage that surmounts it near the point of junction with the head. He observed that the bill could be moved as freely as if it had been only one-half the size. He admired the adroitness with which it disposed of a plantain, five or six inches long, and an inch thick. He says:—"As it swallows the food without division, strength is not therefore required; its food is often massy, hence the convenience of large mandibles. If however we cannot account for the height of the bill, and the entablature with which it is crowned, except by saying that it is an ornament, or intended to give a resonance to the voice, we can show that its Maker has not forgotten to provide against the inconvenience of having so great a weight stretching the muscles by which the head is kept erect. The wings have the upper edges so advanced that a hollow is formed between them, and in this rests the head, cushioned upon the feathers of the back. Thus it reposes in a comfortable nook, with the bill so directed as to coincide with the axis of the body, and all preponderant disposition to bend forward is obviated. . . . The voice is composed of the transient blast of a bugle, and the sudden hiss of an exploding sky-rocket." He adds, that it seems to utter these calls periodically, without any obvious reason, as if to relieve the monotony of its still and melancholy habit.

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* Voyage of the Himmaleh, vol. ii. p. 238.

Major Denham* got from the sheikh at Kouka three Abyssinian hornbills. In that part of Africa they are very scarce and much esteemed, as their flesh is used as medicine in many disorders, particularly for an enlargement of the spleen: it is placed hot to the part affected. This species was reported to the African traveller to be fond of insects, fish, snakes, and serpents, and to have a particular instinct for discovering snakes. "This bird discovers their vicinity while yet many feet under ground, digs on the spot, destroys the nest, and feeds on the venomous inhabitant and its eggs." The specimens brought to the Major, though larger than a turkey, were so young as to be unable to walk. Mr. Macgillivray observed, in one of the islands of the Louisiade

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* Travels and Discoveries in Northern and Central Africa, vol. ii. p. 205 (small edition).

Archipelago, that the heads of a species of hornbill (*Buceros plicatus*) were strung together by the natives and used as an ornament*.

Mr. Edgar L. Layard†, who is familiar with the manners of two species of Cingalese hornbills, alludes to their habits. The *Buceros Pica* is often seen on the ground in grass-land in Ceylon, and he supposed that it was looking for some small mammal. These birds, in flying, "strike the air several heavy strokes with their wings, and then, stretching them out, sail for several yards, when another flap is required, the head and monstrous casque thrown as much forward as their long necks will permit. They always fly in flock, generally in line, uttering their harsh, discordant cries, which may be heard for upwards of a mile." The natives assured him that their mode of plucking fruit from the trees was to seize hold of it, and then throwing themselves off, they turn and twist in the air till the fruit is wrenched off, when they alight, toss up the fruit, catch it in their beak, and swallow it whole. The bird is also said by the natives to build in holes in trees, and when incubation has commenced, the male fastens up the hole by which the female entered, leaving only a small aperture, through which he feeds her. In this way the loving pair are said to guard their treasures successfully from the monkey tribes, the formidable bill of the female nearly filling the entrance. Mr. Layard mentions that the *Buceros gingalensis* resembles the long-tailed cuckoos in its mode of travelling through the lofty tree-tops: it flies into a tree, and creeps to the top on the opposite side, and then darts into the next.

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* Voyage of Rattlesnake, vol. i. p. 283.

† Rambles in Ceylon, Ann. and Mag. Nat. Hist., 1853, p. 234.

Order SCANSORES. The CLIMBING BIRDS.

The birds of this order are almost without exception furnished with four toes, two of which are directed forwards and the other two backwards. This peculiar structure enables most of the birds to cling with great tenacity to the branches and trunks of trees, and to climb up the steepest surfaces which their toes can grasp. Few of the Scansorial birds are possessed of great powers of flight; among trees they spend most of their life, and find on them their favourite food; in some of the families this consists of berries and other fruits, in others almost exclusively of insects and grubs. Most of the climbing birds build their nests in the holes of rotting trunks, many of them depositing their eggs simply amongst the *débris* of the wood, without any nest. By Mr. G. R. Gray the Scansorial birds are divided into four families, of which the Toucan, the Parrot, the Woodpecker, and the Cuckoo are familiar examples.

The first family, the Toucans (RAMPHASTIDÆ), contains birds exclusively found in South America, and remarkable for the great size of the bill, which is sometimes nearly as large as the body itself, but is internally cellular, so that it is very light; the edges are toothed, and both the mandibles are arched towards the tip; the tongue is long and narrow, and has the edges at the end barbed like a feather.

No birds are more admirably suited for their mode of life than the toucans, nor are any arrayed in more striking clothing. Even a close inspection of the black, yellow, red, and green plumage of the various species is singularly agreeable: the colours contrast well. While the plumage, however gorgeous, of smaller birds is all but invisible at a distance, the toucan, on the topmost branch of a towering mora in the woods of Demerara, strikes the eye, from the massy arrangement of the colour; and though his attractive dress has caused the gun of the fowler to be levelled at him, such is the height of the tree, on a dead branch of which he has perched as his "favourite resort," that the shot has either not reached him, or struck him so faintly as only to discompose his sedateness*.

Mr. Waterton found in Demerara six species of *Ramphastidæ*, to three of which, being diminutive, he applies the name Toucanet. According to his observation, these birds feed entirely on the fruits of the forest, and never kill the young of other birds, neither do they touch carrion. At the Earl of Derby's aviary, in 1848, the writer saw many species; and it was amusing to see the dexterity with which each and all of them caught the plums thrown to them from a considerable distance: whether these plums were pitched over or under their perches mattered nothing to the toucans; they seized the fruit, and, by a particular jerk, threw it up in the air, and with open beak re-caught and swallowed it. Waterton says they are partial to each other's company, and often join each other at the same tree, retiring to the same shady noonday retreat. In rainy weather, like some other birds, they are very noisy during the whole day; and utter their "yelping" sounds in fair weather only in the morning and evening. The eggs are deposited in hollow trees, and are, as far as is yet known, two in number and of a round form.

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* See Waterton's 'Wanderings in South America,' p. 5.

The yellow feathers of one of the toucans form part of the ornaments of the Emperor of Brazil on state occasions: the cape is formed of them. The cape is a vestige of the dress of the ancient caciques of the country*.

The large bill, although at first sight out of proportion, is well suited to the habits of the bird, and is very light, notwithstanding its bulky look, being composed of very thin, variously-sized, thinly-partitioned cells and membranes.

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* Stewart's Visit to the South Seas, p. 30.

During the nesting season, according to the observations of some travellers, the toucans use their large beaks to get at the eggs, and even the young, of other birds; and, notwithstanding Mr. Waterton's record of their habits, Mr. Broderip found that a specimen in captivity, when live birds were offered to it, killed them, and seemed to have a cannibal kind of enjoyment in eating them, tearing off the feathers, and then devouring the flesh piece by piece.

In flying, the toucans proceed by jerks, and are described as being awkward when so engaged; but sitting as we see them do in aviaries, with their brightly-coloured plumage and variegated beaks, or actively engaged in catching what may be thrown to them, they are far from clumsy. When sleeping, their tails are raised at a sharpish angle with their backs, which gives them, at such a period, anything but a graceful appearance. The two chief genera of the toucans are *Ramphastos* and *Pteroglossus*. In the latter the beak is not so thick as the head, and the tail-feathers are graduated. From this genus Mr. Gould has separated, under the name of *Aulacorhynchus*, some green-plumaged species which have a deep longitudinal furrow on the side of the beak.

The young of the toucans closely resemble their parents in colour and brightness, unlike the young of most birds, which are generally plain. Thus, in the *Ramphastos dicolorus* (Plate XII. fig. 1), the brilliant orange-and-yellow gorget of the adult is, in tint and form, the same as in the young; and the scarlet carmine of the under parts is of the same brilliancy in young and old.

It is curious, in these birds, to see the prevalence of particular shades of colour in different groups; thus, in the subgenus *Andigena,*—so named from the species frequenting mountain-forests among the Andes,—a peculiar bluish-grey colour runs over the under parts. The *Pteroglossi* have often the under parts banded with red, black, and yellow. The species of *Aulacorhynchus* are generally green, and must look particularly curious among trees, their differently-coloured bills and their motions serving to distinguish them from the trees among which they live. The feathers on the head of one of the species of toucan have the greater part of their shafts flattened and curled, and give the bird the appearance of being ornamented with narrow ribands (*R. ulocomus,* Plate XII. fig. 2).

The family Psittacidæ contains all the Parrots, Cockatoos, Lories, and Parrakeets, and has representatives in every quarter of the globe except Europe. The species are very numerous, and vary in size from the gigantic Macaw to the diminutive Love-bird. They are characterized by having a hard solid beak, which bulges on all sides, and has at the base of the upper mandible a membrane, in which the nostrils are pierced; the bill is hooked, in some of the genera, to a very great extent, and used in climbing as if it were a third foot; the tongue is thick and fleshy, a structure which gives many of them great facility in imitating the human voice. Many birds are better mimics of the notes and songs of others, but none can copy our words or imitate our laughter like the parrots. In consequence of this power some of the parrots are petted; and, by teaching, learn to repeat even short sentences with a plainness and accuracy which are surprising. Their food is exclusively vegetable; and in eating they make great use of one of their feet, by which they convey what they take to their mouth, and also hold the article till it is consumed.

The large beaks of the Parrot tribe are not only powerful prehensile instruments, but frequently serve to strip off leaves or other things which keep them from their food. Thus Mr. Macgillivray believes that the powerful beak of the Great Black Cockatoo (*Microglossus aterrimus*) of New

Guinea and Cape York, "is a most fitting instrument for stripping off the leaves near the summits of the *Seaforthia elegans* and other palms, to enable it to arrive at the central tender shoot*." That naturalist observed the stomachs of the specimen he shot to be filled with triturated fragments of palm-cabbage and a few small pieces of quartz, which, like most *Gallinacea*, this fine crested negro-parrot takes seemingly to promote digestion.

Illiger, Dr. Kaup, Bonaparte, and some other naturalists place the Parrot family at the head of the class. Dr. Kaup† makes the following remarks:—"If we look in the class of birds for an order in which the largest brain, the most perfect eye, and the greatest sagacity of bird is to be found, and which have most analogies to man, and to the Primates, we shall find no other family than that of the *Psittacidæ*. . . . The *Psittacidæ* show a fine oval skull, the eye-socket almost closed; fine and moderately large eyes, of which they can open and contract the pupil at will; the nostrils bored into the nasal bone; cere, the upper mandible large, curved from the broad front, on the sides emarginated, overhanging the short lower mandible, which is turned upwards

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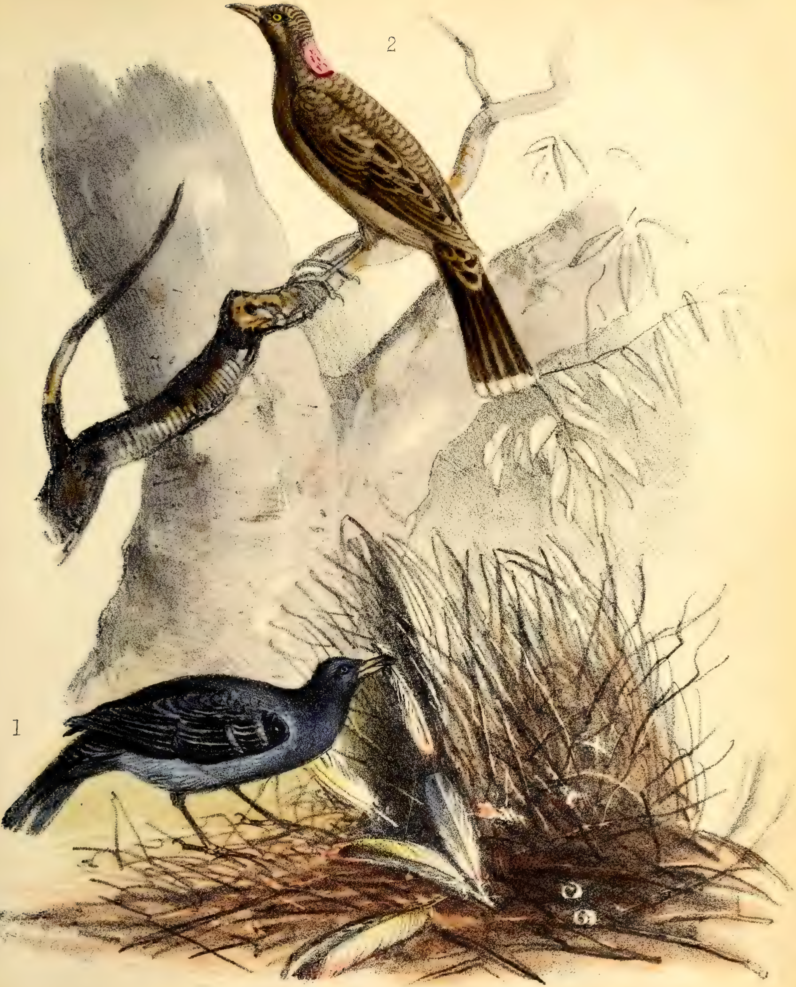
* Mr. Gould, 'Birds of Australia,' supplementary part.

† Jardine, 'Contributions to Ornithology' for 1849, pp. 99, 12.

Plate XI.



Bauerrichter & Cº lith.

1. Ptilonorhynchus holosericens. 2. Chlamydera cerviniventris.

and emarginated on the sides; the point of the bill shows, on the flat of the mouth, a file-like protuberance; the bones of the palate descend towards the throat; the tongue is thick and fleshy; the breast-bone is entire, with two round holes towards the posterior edge; the tarsi are short, with fine granulate scales; the exterior toe is turned backwards—the toes are finely scaled; the wings, though perfectly developed, are not constructed for flying far over the seas. The greater number of them are ornamented with beautiful green and other brilliant colours. They are mostly true tree-birds, living upon vegetable food; they climb with the aid of their bill; use their feet like hands, carrying with them their food to their mouth. Their droll habits are only to be compared to those of the monkeys; they are equally coaxing, capricious, dainty, and malicious. They may all be tamed, and learn to bear confinement. Some may be taught airs, and to imitate spoken words." In Brazil many species are to be met with; one, the *Psittaculus passerinus,* being scarcely larger than a sparrow, while the Scarlet Macaw and Blue Macaw are very great. Mr. Wallace* notices, as a feature of the Amazon, that large flocks of parrots may be observed every morning and evening crossing the river to their feeding or resting-places. He observes, that however many there may be, they constantly fly in pairs, as do the macaws. The little noisy parrakeets indiscriminately associate in flocks, and fly from tree to tree with great rapidity.

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* Travels on the Amazon and Rio Negro, p. 462.

We shall confine ourselves chiefly to a notice of the habits of a few of the many finely-plumaged species found on the continent of Australia, in the landscape of which they form by no means an unimportant feature.

South America and Australia are the chief seats of the numerous species of this family. Mr. Gould, who has described and figured all the Australian species, says that they abound in individuals. The following graphic sketch is derived from his introduction :—" Immense flocks of white Cockatoos are sometimes seen perched among the green foliage of the *Eucalypti ;* the brilliant scarlet breasts of the Rose-bills blaze forth from the yellow-flowering *Acaciæ ;* the *Trichoglossi,* or honey-eating parrakeets, enliven the flowering branches of the larger *Eucalypti* with their beauty and their lively actions ; the little grass-parrakeets rise from the plains of the interior, and render these solitary spots a world of animation; nay, the very towns, particularly Hobart Town and Adelaide, are constantly visited by flights of this beautiful tribe of birds, which traverse the streets with arrow-like swiftness, and chase each other precisely after the manner the swifts are seen to do in our own islands. In the public roads of Van Diemen's Land the beautiful *Platycerci* may be constantly seen in small companies, performing precisely the same offices as the sparrow in England. I have also seen flocks of from fifty to a hundred, like tame pigeons, at the barndoors in the farmyards of the settlers, to which they descend for the refuse grain thrown out with the straw by the threshers. As might naturally be expected, the agriculturist is often sadly annoyed by the destruction certain species effect among his newly-sown and ripening corn, particularly where the land has been recently cleared, and is adjacent to the brushes*."

The Macaws are long-tailed South American parrots, the cheeks of which have a large space of skin crossed with narrow stripes of small feathers; the beak is of very large size. In the northern parts of Brazil Mr. Gardner† met with three species. These birds feed chiefly on the soft fruit of a palm called the *Buriti*; they generally fly in pairs, and deafen the traveller with their loud cries of "ará, ará, ará." From their cries resembling this word, the Indians call them

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* Introduction to 'Birds of Australia,' p. 70.

† Travels in Brazil, p. 279.

"Arára." The various species are brilliantly coloured: one is entirely of a hyacinthine blue; another, common in our aviaries, is blue and yellow; and a third is red and yellow. These birds

> "Make our children open ear and eye,
> Gaze on their feathers, wonder at their talk,
> And think 'tis almost time for Poll to walk."

The Indians on the Rio Negro are very fond of a head-dress made of feathers from the shoulders of the Red Macaw; and attached to this are occasionally some of the large, snowy-white, loose, downy feathers from the under tail-coverts of the Harpy. Mr. Wallace* says that the Indians occasionally keep these noble birds in great open houses or cages, feeding them with fowls, solely for the sake of these feathers, which are highly prized, not only from their being almost equal in beauty to a plume of white ostrich-feathers, but from the birds themselves being rare. Such ornaments are accordingly highly prized, and are not often met with.

However amiable and petted Cockatoos may be, isolated or in captivity, when at large and in flocks in their own land they prove very destructive, not only from their feeding upon the produce of the farmer, but from their seemingly wanton destruction of his property. Mr. Gould, writing on the Crested Cockatoo (*Cacatua galerita*) of Australia, says that on the fields of newly-sown grain and ripening maize this bird commits the greatest devastation. It may be imagined that it is not with a small portion that a flock of these voracious and large birds, varying from one hundred to a thousand, will be satisfied. Before man settled in its haunts or had learned from experience its destructiveness, the sight of a flock of these lively birds, with their snow-white plumage, long yellow crest, and thick black bill, disporting "amidst the umbrageous foliage like spirits of light," must have been a cheering sight. Mr. Gould says that the noise caused by the discordant screams of a flock of these birds, can hardly be conceived by those who have only heard one or two of them in a state of captivity. This bird most usually deposits its eggs in the holes of trees, and sometimes also in the fissures of rocks. The conspicuous white cliffs on the banks of the Murray River in South Australia are annually resorted to for the purposes of nidification, and are quite honeycombed by them. If the cockatoos are proportionately more noisy than rooks at such a season, it is to be hoped that colonists will not just yet settle on the ground within some miles of them. One of the handsomest of the

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* Wallace, 'Travels on the Amazon and Rio Negro,' p. 295.

Parrot tribe is the Pink Cockatoo (Plate XIII. fig. 2, *Cacatua Leadbeateri*) of Australia. The under side of the body and the wings is of a delicate rosy colour, and the feathers of the crest on the head are crimson at the base, with a yellow spot in the centre, and are white at the tip. Some of the cockatoos have the upper mandible much elongated, a structure which enables the possessors to grub up the roots of the bulbous and other plants on which they feed. The Long-billed Cockatoo of Australia (*Licmetis nasicus*) is one of these: the most remarkable however in this respect is the *Nestor productus,* a species now restricted to Philip Island, near Norfolk Island.

No genus or species of the Parrot tribe is more curious than the Owl-faced Green Parrot of New Zealand, first described by Mr. G. R. Gray (*Strigops habroptilus,* Plate XIII. fig. 1). This species is nocturnal in its habits, as its somewhat lurid aspect would betoken. Mr. Strange has published a few particulars of its habits, which are given in the 'Proceedings of the Zoological Society of London.' No one would, *at first sight,* imagine that the Macaw and *Strigops* belonged to the same natural family. In New Zealand this curious bird is called *Kakapo:* it resorts, during the day, to burrows formed under the roots of trees, or to large masses of rock; it feeds on the roots of various kinds of fern, and also on the outer covering of the New Zealand flax (*Phormium tenax*).

The matter-of-fact man, as well as the poet, knows well that—

> "The deep affections of the breast
> That Heaven to living things imparts,
> Are not exclusively possess'd
> By human hearts."

Many instances could be given of this; volumes of anecdotes about dogs, cats, ponies, horses, thrushes, pet canaries, and poll-parrots have been published, and supplements without number might be given and will yet perhaps be given. We could tell anecdotes of various parrots, but prefer the following "incident, so strongly illustrating the power of memory and association, in the lower animals." The poet Campbell assures us it is not a fiction: he heard the circumstance in the island of Mull, from the family to whom the bird belonged:—

> "A parrot, from the Spanish main,
> Full young, and early caged, came o'er,
> With bright wings, to the bleak domain
> Of Mulla's shore.

"To spicy groves, where he had won
His plumage of resplendent hue,
His native fruits, and skies, and sun,
He bade adieu.

"For these he changed the smoke of turf,
A heathery land and misty sky;
And turn'd on rocks and raging surf
His golden eye.

"But, petted in our climate cold,
He lived and chatter'd many a day;
Until, with age, from green and gold,
His wings grew grey.

"At last, when blind and seeming dumb,
He scolded, laugh'd, and spoke no more,
A Spanish stranger chanced to come
To Mulla's shore.

"He hail'd the bird in Spanish speech;
The bird in Spanish speech replied,
Flapp'd round his cage with joyous screech,
Dropp'd down and died*."

The family of the Woodpeckers (PICIDÆ) is distinguished by most of the species having a long, straight, angled bill, the end of which is wedge-shaped, so as to enable the birds to dig with greater effect into wood; the tongue is very long and extensile, and is armed at the tip with spines; the tail is formed by stiff feathers, pointed at the end, which

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[*] Campbell's Poetical Works, p. 335, ed. 1843.

being pressed against the tree, support the bird when climbing. The feet have, with but few exceptions, four toes; two of which are directed forwards, and two backwards. This family contains a very numerous assemblage of birds, which are very widely distributed over the world, the Australian continent alone not containing any species of true woodpecker. The food of the woodpeckers consists chiefly of the grubs and pupæ of insects, which they find in decaying trees. Their long spine-furnished tongue can be pushed out far beyond the end of the bill into chinks in the bark, or holes; and, in addition to the barbs at the end, it is plentifully supplied with mucus by large salivary glands, so that the insects and larvæ are either raked up by it, or stick to the glutinous secretion. They occasionally eat seeds and berries of various kinds; but their stomach has no grinding powers, so that seeds swallowed entire pass through them undigested. Woodpeckers are solitary birds, laying their eggs in holes, which they dig or find in rotten trees; they lay few eggs, and the colour of them is for the most part white. One of the chief and largest of the family is the Ivory-billed Woodpecker of America (Plate XIII. fig. 3), whose history has been recorded by Alexander Wilson in his 'American Ornithology.' "Nature seems to have designed him a distinguished characteristic in the superb carmine crest and bill of polished ivory, with which she has ornamented him. His eye is brilliant and daring; and his whole frame so admirably adapted for his mode of life, and method of procuring subsistence, as to impress on the mind of the examiner the most reverential ideas of the Creator." He proceeds to describe this noble woodpecker, when engaged on a towering forest-tree, among the almost inaccessible recesses of a cypress-swamp. "His trumpet-like note and loud strokes resound through the solitary, savage wilds, of which he seems the sole lord and inhabitant. Wherever he frequents, he leaves numerous monuments of his industry behind him. We there see enormous pine-trees with cartloads of bark lying around their roots, and chips of the trunk itself in such quantities as to suggest the idea that half-a-dozen axemen had been at work there for the whole morning. The body of the tree is also disfigured with such numerous and so large excavations, that one can hardly conceive it possible for the whole to be the work of a woodpecker." It is only trees that have been attacked by insects that this useful bird frequents; so that "it is neither from motives of mischief nor amusement that he slices off the bark, or digs his way into the trunk."

Wilson gives an interesting account of a specimen which he kept for three days, having wounded it in the wing. On catching it, the bird uttered a most piteous and loudly reiterated note, resembling the crying of a young child. On getting to the hotel at Wilmington, he took it upstairs, and locked it in his room. "In less than an hour I returned: and, on opening the door, he set up the same distressing shout, which now appeared to proceed from grief that he had been discovered in his attempts at escape. He had mounted along the side of the window, nearly as high as the ceiling, a little below which he had begun to break through. The bed was covered with large pieces of plaster; the lath was exposed for at least fifteen inches square, and a hole large enough to admit the fist, opened to the weather boards; so that in less than another hour he would certainly have succeeded in making his way through. I now tied a string round his leg, and, fastening it to the table, again left him. I wished to preserve his life, and had gone off in search of suitable food for him. As I re-ascended the stairs, I heard him again hard at work; and, on entering, had the mortification to perceive that he had almost entirely ruined the mahogany table to which he was fastened, and on which he had wreaked his whole vengeance. While engaged in taking a drawing, he cut me severely in several places; and, on the whole, displayed such a noble and unconquerable spirit, that I was frequently tempted to restore him to his native woods. He lived with me nearly three days, but refused all sustenance, and I witnessed his death with regret*." Wilson remarks that the head and bill of this species are worn by the southern Indians, not only as an ornament, but as a charm. In a few species of woodpeckers, forming the genus *Colaptes*, the bill, instead of being straight and grooved (or channeled), and wedge-shaped at the end, is long, slightly bent, and tapers almost to a point; to this genus belongs the Goldwinged Woodpecker (*Colaptes auratus*), which uses its bill "like a long and sharp pickaxe, to dig up the hillocks of pismires that inhabit old stumps in prodigious multitudes." The American ornithologist gives a most lively account of this species, and has recorded the energy with which both male and female engage in preparing their nest; they alternately relieve and encourage each other, renewing their labour for several days, till the hole is made large enough and sufficiently secure. They may be heard at this employment till a very late hour in the evening, among the soft chips and dust of the wood.

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* American Ornithology, Constable's Miscellany, vol. i. p. 135.

"Rap, rap, rap, rap, I hear thy knocking bill,
Then thy strange outcry, when the woods are still;
Thus am I ever labouring for my bread,
And thus give thanks to find my table spread."—*Jas. Montgomery.*

The Wrynecks are closely allied to the woodpeckers, and agree with them in having a long tongue, capable of being extended; it is unfurnished with spines: the beak is without angles, and the tail has no stiff and pointed feathers. Our species (*Yunx Torquilla*) is not uncommon, though its colour and shyness do not invite inspection. From its habit of twisting about its head and neck in different directions, it has acquired its English name and its Latin specific appellation. The unfortunate but sweet poet, John Clare, in his forty-first sonnet, has accurately described some of its habits:—

"THE WRYNECK'S NEST.

"That summer bird its oft-repeated note
Chirps from the dottrel ash, and in the hole
The green woodpecker made in years remote,
It makes its nest. When peeping idlers stroll,
In anxious plundering moods, they by-and-by
The wryneck's curious eggs, as white as snow,
While squinting in the hollow tree, espy.
The sitting bird looks up, with jetty eye,
And waves her head in terror to and fro,
Speckled and vein'd with various shades of brown;

And then a hissing noise assails the clown.
Quickly, with hasty terror in his breast,
From the tree's knotty trunk he slides adown,
And thinks the strange bird guards a serpent's nest*."

The Cuckoos (CUCULIDÆ) are celebrated from most of the species, whose habits are recorded, having the singular custom of depositing their eggs in the nests of other birds, generally far inferior to them in size. In these nests the eggs are incubated by the selected nurse; and, as a reward for her kindness, the young cuckoo manages, when strong enough, to eject the nurse's own progeny.

The cuckoos are not all unfamiliar with the cares of nest-building and the responsibility of rearing their young. Thus, the Pheasant Cuckoo of Australia (*Centropus Phasianus*) builds, according to Mr. Gould, a nest of large size, formed of dried grasses, in collecting which one of its long hind-claws must doubtless be of considerable use. This nest is of a domed shape, with two openings; while the female is hatching, her head protrudes through one hole and the tail through the other. Mr. Gould found the *Centropi* in swampy places, among the brushes which abounded with tall grasses and dense herbage. In such places they ran with great facility, and when forced to leave them flew

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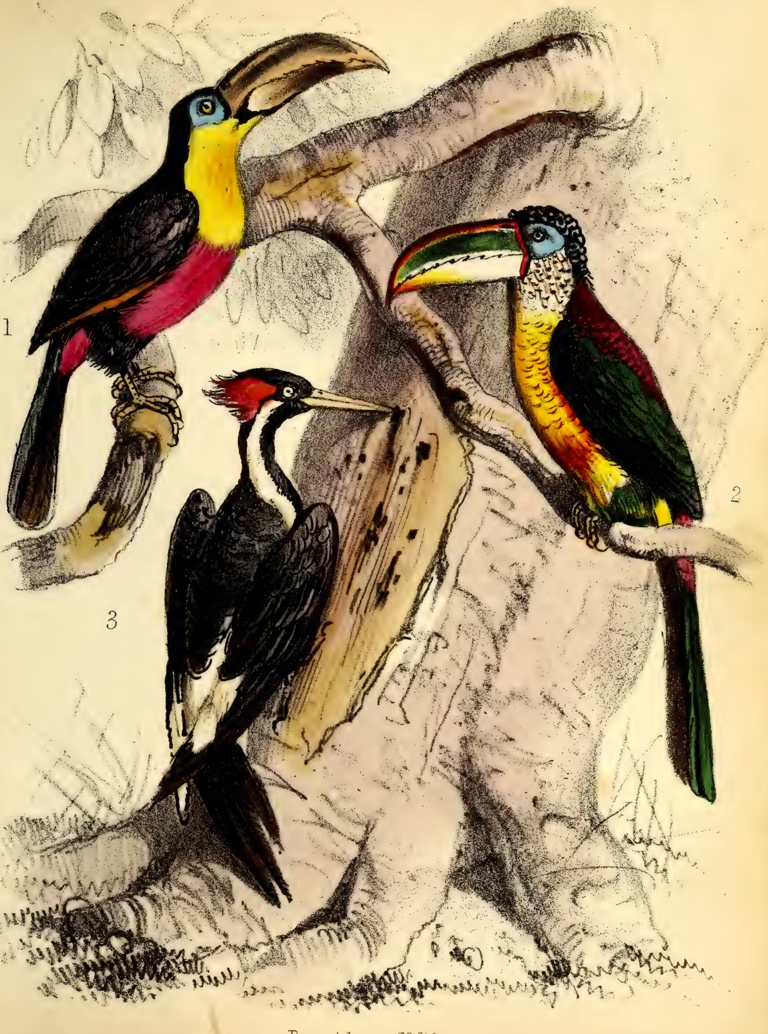
* The Rural Muse, Poems by John Clare, p. 140.

Plate XII.



Bauerrichter & C.º lith.

1 Ramphastos dicolorus. 2 P 3 P

to the lower branches of the trees, from which they ascended, in a succession of leaps, from branch to branch.

Some species of cuckoos are fond of honey, in obtaining which they show a curious instinct, of which advantage is taken by the natives of South Africa. These cuckoos are named Honey-guides; and, having generic characters sufficient to distinguish them from the other species of the family, have been placed in a separate genus, to which the name of *Indicator* has been applied, in allusion to the use made of them by various South African tribes. Mr. Pringle* says that during his residence in the interior of the Cape Colony, he often partook of wild honey procured by its guidance. He describes the cuckoo as usually sitting on a tree by the wayside, and when any passenger approaches it greets him with a cry resembling the words, "cherr a cherr! cherr a cherr!" Should the passer-by attend to the call, the bird flies on before him, in short flights, from tree to tree, till it has brought him to a spot where a beehive is concealed. "It then sits still and silent till he has extracted the honeycomb, of which it expects a portion as its share of the spoil; and this share the natives, who profit by its guidance, never fail to leave it." The honey-guide is said to be useful also to the ratel (*Ratelus mellivorus*), by discovering to it the nests of those bees which build in the ground, and the quadruped is reported to share the plunder with the bird in a generous manner, worthy of being recorded.

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* Notes to Poetical Works, p. 77.

Some cuckoos, such as the *Zanclostomus viridirostris*, or Green-billed Cuckoo of India*, frequent jungles and forests where bamboos abound, or where the trees are festooned by creepers, and tenanted by *Orthoptera* of the Mantis and Locust families. These insects, with their resemblances to green leaves and the various parts of vegetation, green, dry, or dead, however they may escape the detection of passers-by, do not fail to attract the eyes of these birds, who "crunch and munch" their hard legs and dry wings, but, like the Arabs and Hottentots, find soft bits in their bodies. The dark green colour of the upper parts of this bird and its green beak must often assist in enabling it to escape detection, while the blue bare space round its eye gives the head an expression, which without it would be very tame. Many cuckoos are of green colours, and well fitted in consequence to escape detection, while others have the barred and speckled appearance of many hawks; indeed, our cuckoo, that "beauteous stranger of the grove," is sometimes taken for one. The poet may well be allowed to make this favourite bird reply to the question—

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* Jerdon's 'Illustrations of Indian Ornithology,' pl. iii.

> "Why art thou always welcome, lonely bird?"
>
> "The heart grows young again when I am heard;
> Nor in my double note the magic lies
> But in the fields, the woods, the streams, the skies."

A species of cuckoo, very similar to the well-known European bird, is found in the northern parts of Australia. Mr. Gould has given it the name of *Cuculus optatus*, and no less truly than beautifully remarks, that, when we are in countries far remote from our birthplace, our minds delight to seize on any objects which remind us of our own country. "By the colonists of New South Wales and Van Diemen's Land, a stripling oak or an elm, a violet or a primrose, are regarded as treasures; and a caged blackbird or lark is more prized than a bird of paradise would be here; how welcome then to the settlers will be this cuckoo, when the part of Australia in which it is found becomes inhabited by Englishmen! Here, as in Europe, it is the harbinger of Spring; and its voice will be heard with even greater sensations of pleasure than was that of its representative in Europe." Many of the cuckoos in Australia are similar in habits to their famed namesake in Britain: they devolve the care of their offspring on some of the smaller birds, preferring especially the nests of the honey-eaters. Mr. Gould says, when giving an account of the *Cuculus inornatus*, that after the young has left the nest and grown to a considerable size, it is not unusual to see it fed by two or more different species at the same time, as if the "smaller birds had entered into a mutual compact" to feed the cunning parasite. The Golden or Bronze Cuckoo (*Chrysococcyx lucidus*) most generally deposits its egg in a domed nest, with a very small hole for an entrance.

Some of the cuckoos have a long claw to one of the hind toes, as in the lark and *Plectrophanes:* they seem to be peculiarly terrestrial in their habits. The Crow Pheasant of India, or Lark-heeled Cuckoo (*Centropus pyrrhopterus*), is one of these birds. Mr. Jerdon describes it as feeding chiefly on the ground, where it walks and runs with the greatest ease, and finds abundance of food. This consists of large insects, centipedes, lizards, scorpions, and small snakes. It is a slow and stupid bird; and as its powers of flight are very feeble, it can be easily run down*.

The *Crotophaga Ani*, or Savanna Blackbird, is described by Mr. Gosse as being the most common of the birds of

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* Jerdon, Madras Journal, vol. xi. p. 224.

Jamaica: it is met with most abundantly in places occupied by horses or cattle, from the bodies of which it is fond of picking the parasitic insects: it is chiefly on insects that it feeds, and, from the vast numbers which it catches, the bird must prove very useful in reducing them. Mr. Gosse found the stomach distended with such a quantity of beetles, caterpillars, moths, and other insects, that he wondered how the mass could have been forced in: it occasionally feeds also on berries. Mr. Hill remarks, that the thin, knife-blade-like beak of the bird is used to open out the soft earth in which it seeks for its insect food, while it also assists it when searching for the ticks and other vermin imbedded in the long close hair of animals. The same accurate observer says, that about half-a-dozen of the Anis unite in building a nest, which is capacious enough for them to resort to in common, and in this they rear their young; they are very attentive when engaged in incubation, and never leave the nest without covering the eggs with leaves. The Anis are familiar birds, allowing approach and observation; but still they are wary, and fly off on the stranger coming too close to them,—a circumstance of which they are warned by the sentinel, for, when feeding, they never fail to appoint one of their number as a watch.

The Barbets form a group of large-billed birds, peculiar to the warmer parts of the world, and most of them signalized by the various bright colours of their plumage. The beak is thick and conical, and bulged on the sides at the base, with various bundles of stiff bristles, directed forwards. Though the toes are arranged as in the Scansorial birds, none of the numerous species of the genus *Bucco* and *Pogonias* seem to climb. Their beak, with the edges of their upper mandible, sometimes (*Pogonias*) strongly toothed, is well formed to cut the stems of fruits and to crush them. One of these, the "Coppersmith" (*Bucco Indicus*) is, according to the ornithologist of the Indian Peninsula*, a very abundant species in India, wherever there are trees in any quantity. It is a familiar bird, coming close to houses, and is not unfrequently observed perching on the house-top. It hops about the branches when feeding, and does not climb. Its chief food is fruit of various kinds, and sometimes insects. When not feeding it sits generally on the top of a tree, and utters a monotonous call, nodding its head first to one side and then to another. The Hindoos call it *Tambayut*,—that is, "Coppersmith,"—a name given to it by many of the European residents.

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* T. C. Jerdon, Esq., Madras Journal of Literature and Science, April, 1840, vol. xi. p. 216.

Mr. Swainson has thus graphically described the habits of one of the South American Barbets, which belongs to the family *Alcedinidæ*, and which Mr. G. Gray has named *Bucco Swainsoni* in honour of him :—

"There is something very grotesque in the appearance of all the Puff-birds; and their habits, in a state of nature, are no less singular. They frequent open cultivated spots, near habitations, always perching on the withered branches of a low tree, where they will sit nearly motionless for hours; unless, indeed, they descry some luckless insect passing near them, at which they immediately dart, returning again to the identical twig they had just left, and which they will sometimes frequent for months. At such times the disproportionate size of the head is rendered more conspicuous by the bird raising its feathers, so as to appear not unlike a puff-ball; hence the general name they have received from the English residents in Brazil, of which vast country all the species, I believe, are natives. When frightened, their form is suddenly changed by the feathers lying quite flat. They are very confiding, and will often take their station within a few yards of the window. The two sexes are generally near each other, often on the same tree*."

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* Swainson, 'Zoological Illustrations,' pl. xcix. vol. ii. (1820–22.)

Order COLUMBÆ. The PIGEONS.

THIS order contains but one family, the COLUMBIDÆ, or Pigeons;—an extensive group, very generally distributed over the world, and containing species some nearly as large as the turkey, while others are not much larger than a sparrow. They are all characterized by their vaulted beak, the nostrils being placed in a membranous space and covered with a cartilaginous scale. The crop is very large, and expands on each side of the œsophagus,—a peculiarity in this order of birds; it is in the crop that the food is elaborated before it is conveyed to the young, and mixed with a milk-like secretion, which flows from its inner surface only during the incubation of the young; the gizzard, as in the birds of the next order, is very muscular; the feet have four toes, three in front, divided to the base, and one behind, which springs from the bottom of the tarsus, at the same level with the other toes, and takes a firm grasp of the branch in perching; the wings are strong and concave, and the tail consists of twelve feathers. These birds differ widely from the *Gallinæ,* with which they have been arranged, in their habits. They are strictly monogamous; the male assisting the female in the formation of the nest, and taking his turn in the process of incubation, assisting to feed the young, which, when hatched, are blind and naked, and are fed by the parents till they are feathered, and even for some time after. Their nests are built in trees or among rocks; and the female lays only two eggs at a time, though she breeds frequently. The forms and motions of the various members of the Pigeon family are particularly elegant, and the colours are always soft and pleasing to the eye; in manners they are very gentle, and their expression answers to their disposition. The gentleness and connubial attachment of the Turtle Dove are proverbial; but these mild and engaging manners are not peculiar to that emblem of softness, but are common to the whole order.

One of the most remarkable of the Pigeon family is the Migratory or Passenger Pigeon of North America (*Ectopistes migratorius*), whose numbers almost exceed belief. Audubon, in 1813, witnessed a migration of this species, on the banks of the Ohio, which continued for three days; allowing two pigeons to occupy a square yard of space, he calculated that a flock contained one billion one hundred and fifteen millions one hundred and thirty-six thousand pigeons; and as it is estimated that each pigeon eats half-a-pint a day, he calculates that such a flock would require eight millions seven hundred and twelve thousand bushels per day. Even with considerable allowances for roughness of calculation, there can be no doubt of the great devastations committed by this bird wherever it abounds. As a set-off to these injuries, Audubon mentions that great numbers of foxes, lynxes, polecats, eagles, and hawks prey on the passenger pigeon: amongst such flocks these predacious beasts and birds must make great havoc.

The powers of pigeons on the wing are proverbial. A remarkable variety, before the electric telegraph came into operation, carried many a message to and from distant parts with great rapidity. This variety is called the Carrier Pigeon; and some specimens, when well trained, used to fetch large prices. Speculators in the funds*, such as the Rothschilds in former times, some twelve or fifteen years ago, could not wait for the slow, ordinary courier, who brought news from the continent; so they began to get intelligence by special messengers. This intelligence was not fast enough; so pigeons were trained, and after their *education* could be relied on, "establishments" for their reception were formed on both sides of the Channel; these establishments required trustworthy persons to despatch the pigeon-messengers and to receive them. It required a large sum to maintain a "pigeon express"; as much as £600 or £700 a year were spent on one, a sum which may be easily imagined, when it is taken into account that, in case some of the birds might be shot on their passage, a flock of eight or a dozen were started together. The messages were in a shorthand or hieroglyph, known only to the interested "pigeon-man." The carrier pigeon's place is supplanted by the telegraph, but the bird is still used. The last account we have heard of its being employed to convey a message from a remote place was in 1850, by old Rear-Admiral Sir John Ross, in Cornwallis Island, when in search of the crews of the Erebus and Terror; but as it was a wild distance and a wild scheme, a carrier pigeon was not likely to come such a way.

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* City Men and City Manners, or the Physiology of London Business (1852), pp. 47–49.

A fine species of pigeon (*Calænas Nicobarica*), belonging to the genus *Calænas*, is distinguished by the pointed feathers of the back, and its beautiful more or less golden-green colour, with purple and blue reflections; it is found in the Philippine, Nicobar, and other groups of islands in the Eastern Seas. Though when in confinement this curious pigeon prefers being on the ground, Mr. Peale observed that, on the island of Mangsi, in the straits of Balabak, it was decidedly arboreal, and was never observed on the ground. It frequented lofty fig and other fruit-trees, feeding with nutmeg pigeons (*Carpophaga ænea*), but generally at a less elevation. The call is a deep-toned coo, somewhat resembling the cry of some owls*. Mr. Macgillivray found this species on the Duchateau Islands, living chiefly on the ground, where it ran with great swiftness, only flying up to a tree when disturbed. Its nest was of the rude platform construction usually found among the Pigeon family†.

The Nutmeg Pigeons (*Carpophaga*) are a beautifully coloured group, feeding on nutmegs and other fruits. The naturalist of the Rattlesnake speaks of one of the species (*C. oceanica*) as being common in the Louisiade Archipelago. During the heat of the day its favourite place of resort is among nutmeg and other shady trees, amongst which it is with difficulty distinguished. He speaks of its flavour as food being very excellent, and most of the specimens his party killed were very fat; some of them "even burst open in falling to the ground after having been shot."

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* Zoology of United States Exploring Expedition, vol. viii. p. 207.

† Voyage of H.M.S. Rattlesnake.

These nutmeg pigeons are beautifully coloured, as are many of the exotic species.

As illustrations of the family, we figure the *Ptilinopus strophium* and *Columba cruenta* (Plate XIV. fig. 2 and 3). The first-mentioned is a pretty dove with a pink forehead and broad cream-coloured pectoral band; it was found by Mr. Macgillivray on the Duchateau group. The latter species has a singular red mark on the breast, which looks as if it had been shot by an arrow there; it is a native of some of the Indian islands.

The plaintive cooing of our Cushat Dove is familiar to those who ramble through woods or walk in their neighbourhood.

> "The deep mellow crush of the wood-pigeon's note
> Made music that sweeten'd the calm."—*Campbell.*

The foreign pigeons resemble our species in the nature of their note. Mr. Gosse, in his 'Naturalist's Sojourn in Jamaica*,' says:—"In the recesses of the mountain forests, the silence is broken by the loud hollow calls of the Ring-tail and Blue Pigeon (*Columba Caribbea* and *C. rufina*), and by the mournful cadences of the lustrous Mountain Witch (*Geotrygon sylvaticum*). The woods that densely clothe the inferior summits, and sheet the sides of the sloping hills, resound with the energetic coo of the Bald-pate (*Col. leucocephala*); the short reiterated moans of the Partridge Dove (*Geotrygon montanum*); the querulous call of the Ground Dove (*Chamæpelia passerina*); and the tender melancholy sobbing fall of the gentle White-belly (*Peristera Jamaicensis*).

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* P. 173.

"But as it is in the lowland plains and cultivated estates that we most abundantly hear the melody of singing-birds, so here do the plaintive voices of the doves fall most frequently upon the ear. The White-wing (*Turtur leucopterus*), and the Pea-Dove (*Zenaida amabilis*) are essentially lowly birds; and these, with the exception of the white-belly, are the most incessant and the most tender of all our cooers; not however that we hear their voices immediately around the homestead—when they come into the open pastures to feed they are usually wary and silent;—but from the surrounding woods, the tall thick trees of the pens, and especially the impenetrable mangrove morasses, their loud but sweetly gentle moanings fall with a mournfully pleasing cadence upon the ear. The pea-dove's voice is the more tender, and is particularly prominent in the evening, while the blustering sea-breeze gradually lulls itself to repose; the longer, sharper, and more impatient call of the white-wing is most heard in the morning, though each season brings the notes of both birds, from all parts of the woods around. They are respectively characteristic of the quietude of the late and early hours.

> " 'Nec tamen interea raucæ . . . palumbes,
> Nec gemere aëriâ cessabit turtur ab ulmo.'
> *Virgil. Buc. Ecl.* i. 58.

"None," continues the pleasing naturalist of Jamaica, "but those who have listened to these gentle voices can tell what an effect they produce upon the mind. Their tender melancholy communicates itself to the hearer; and though reason tells him that they are the expressions of buoyant joy and health, he can scarcely fail to feel a pang of sympathy for what seems to be the complaint of gentleness and distress."

In the island of Upola, one of the Samoan group, formerly lived in great abundance a very curious pigeon named *Manu-mea*. Sir William Jardine, Bart., described the species under the name of *Gnathodon*, about the same time that Mr. Peale named and recorded its history from ampler materials as *Didunculus strigirostris* (Plate XIV. fig. 1). It is of a rounded robust form, and is particularly distinguished by its compressed hooked beak, the upper mandible being as much curved as in the hawks, while the lower mandible, which closes outside the upper, is truncated at the end, and notched with two incisions near the end. Its face is devoid of feathers; its wings and short tail show that the bird was not intended for flight; while its large muscular legs, with their strong nails, as clearly point out that the ground is its proper home. Mr. Peale, the naturalist of the United States Expedition, informs us that, according to the tradition of the natives, it once abounded; but, some years ago, these persons, like more civilized folks, had a strong desire to make pets of cats, and found, by means of whale-ships, opportunities of procuring a supply; the consequence of the introduction of "pussy," for under this familiar name were the exotic tabbies introduced, was the diminution of the *Didunculus*. Cats, as Mr. Peale clearly points out, not liking yams and taro,—vegetable products used by the natives as food,—took to the woods and hills to search for birds. The short-winged *Manu-mea* fell an easy prey, and, like the dodo, he has fallen a victim, but to a more ignominious enemy. The *Didunculus* builds its nest and lives chiefly on the ground; and, when disturbed, makes with its wings a whirring sound, like partridges. Its food is chiefly fruit, and it seems to like that of a large fig-tree, called *owa* by the natives. This tree is most gigantic: the trunk of one measured by Mr. Peale was a hundred and two feet in circumference, and about the same height from the ground to the main branches. Three specimens only were procured, by the Expedition, of this bird, so rare is it now; and of these, two were lost by the wreck of the ship*.

Like the dodo and solitaire, great birds which the *Didunculus* somewhat resembled, this local species will soon probably be extinct, and only known, like the former, by remains preserved in museums or by pictures. Those who are desirous of studying the history of the dodo, a bird shown by Dr. Melville and Mr. Strickland to have belonged to the order of Pigeons, should consult the finely-illustrated quarto volume, drawn up with so much learning by these two gentlemen. The history of its extinction, as the history of *one* of the species of animals which have been destroyed in comparatively recent times, is a most interesting one to the student of the Distribution of Animals.

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* United States Exploring Expedition, 1838–1842, under the command of Charles Wilkes, U.S.N., vol. viii. p. 208, etc. Mammalia and Ornithology, by Titian R. Peale. Philadelphia, 1848.

Order GALLINÆ.

THE order GALLINÆ contains such birds as the Domestic Poultry, Peacocks, Turkeys, Guinea-fowl, Partridges, Quails, Grouse; in fact, nearly all the birds which are most useful to man. They are, generally speaking, heavy birds, with no great power of wing, and are nearly all scrapers of the ground with their strong feet. From this habit the name *Rasores*, or Rasorial birds, has been applied to the order.

The birds of this order seldom construct a nest, generally laying their eggs, which are numerous, in a hole scratched in the ground. The males of most of them are very pugnacious, and are often armed with spurs on their tarsi, which they use as weapons.

The feathers of the *Gallinæ* are generally strong and highly polished. Our space only allows us to treat briefly a few particulars of the habits of some species of the different families; we refer the reader to a valuable work on 'Poultry,' by the Rev. E. Dixon, in which there is much information about them.

Dr. Kaup thus sums up the character of the gallinaceous birds :—They have all "a more or less naked membrane, which, as crests, flaps, or caruncles, appears on the head and neck; perfect plumage, with gorgets and odd tail-feathers, and of most splendid colours; a very large pelvis; strong feet, for running; the greatest number of eggs; a strong sexual propensity; polygamy,—the male takes no care in rearing the brood; a very slight indication of intellectual life, so that it may be said that they are preserved only by their great fertility: if, for instance, the partridge laid but two eggs, it would have been extirpated long ago by ravenous animals and men. We remark, also, that they love to bathe in dust or sand, are very pugnacious in regard to their females, and live on vegetable food*."

South America is the native country of a family of this order, called Cracidæ, some of which, as the Curassows, are familiar to the visitors of our Zoological Gardens (Plate XVII. fig. 2. *Crax Yarrellii*). These birds are mostly of large size, and considerably resemble turkeys; the tail is very broad and rounded, and consists of fourteen stiff feathers; the hind toe is on the same level with the other toes, so that the birds can perch and nestle upon trees; they live in the woods, and find their nourishment there, feeding chiefly on buds and fruit; they are of a sociable disposition, congregating in large flocks, and are far from being shy; but in Europe they have not been known to breed. The species of Curassows (*Crax*) have a strong beak, the base being surrounded with a cere-like skin, which is sometimes brightly coloured; the head is furnished with a crest of long, narrow, curiously-curled feathers, which the bird can erect at pleasure. The species of Pauxi (*Ourax*) have the bill shorter and thicker; and the membrane at the base, as well as the greater part of the head, is covered with short, thickly-placed, velvet-like feathers. A curious but common species of this genus (the *Ourax Pauxi*) has an immense hard oval tubercle, nearly as large as the head, projecting from the base of the beak; this tubercle, being of a light blue colour, contrasts well with the deep black plumage.

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* Kaup, in a paper translated by him in 'Jardine's Contributions' (1849), p. 116, 29.

The curassows were at one time so far domesticated in Holland as to have been found equally prolific with other poultry; but in this country, notwithstanding great efforts have been made, these birds have not as yet been found to breed. This is to be lamented, as they would not only form a beautiful addition to our poultry-yards, but, from the delicacy of their flesh, would prove useful as an article for the table.

The genus *Penelope* contains the Guans, which are smaller birds than the curassows, and much more slender. In these birds there is a space round the eyes, and also on the throat, destitute of feathers; these naked parts are often brightly coloured in the living bird.

In New Guinea and the more tropical parts of Australia there exists a genus of birds remarkable for the large mounds which the different species construct. The name *Megapodius*, or Great-foot, is applied to them from their strong legs and long feet, which seem to be out of proportion to the size of the birds. It is with these large strong feet that they collect together and heap up the mounds in which they deposit their eggs. Mr. Gilbert* was the first to describe the habits of the curious Australian species, named *M. tumulus* by Mr. Gould. Messrs. Jukes and Macgillivray, during the voyage of H.M.S. Fly, found the same species, and saw its mounds, on one of the Possession Islands. One of these mounds was as much as a hundred and fifty feet in circumference, and its perpendicular height was from ten to twelve feet; it seemed to be composed of earth and fragments of coral. These gentlemen opened a smaller mound of this bird, which seemed to be newer and more perfect than the other. This mound formed a pretty regular cone, about eight feet high, on a base seventy-seven feet in circumference. Mr. Jukes* adds :—"Externally it seemed to be composed of loose earth and fragments of stone, mixed with pieces of stick. . . . We began digging into it about two-thirds of the way up one side, but found the interior so firmly compacted together with sticks and stones and roots of trees that it was no easy task; and after working for two or three hours, we were obliged to get two men to assist us. With their help, we at last cleared off three or four feet of earth and got into the interior, where we dug down and presently came upon a broken egg; this was an old one, the yolk being partly consolidated and rotten. We then turned up several spots full of fragments of egg-shells. . . . We then took to our hands, and, by groping into a soft spot, we succeeded in finding a perfect egg. . . . It was firmly bedded in the earth, which, just around it, was devoid of sticks or stones." They could perceive no additional temperature in the centre of this mound. The eggs are very large compared with the birds.

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* In Gould's 'Birds of Australia.'

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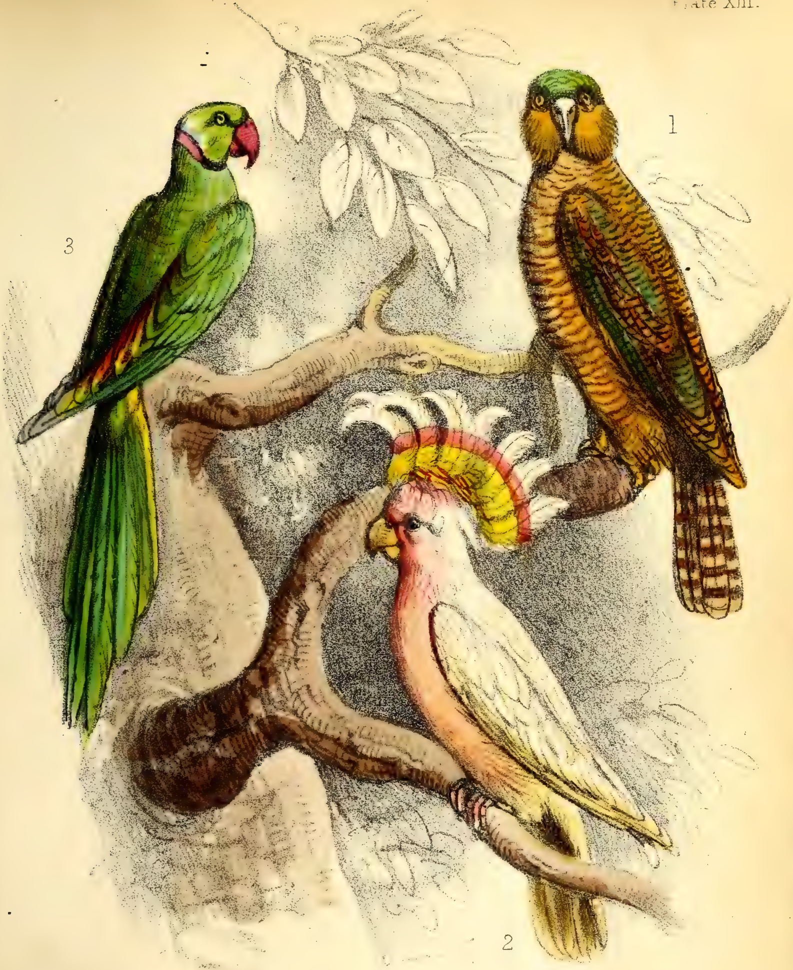
* Narrative of Voyage of Fly, vol. i. p. 147.



Bauerrichter & C° lith.

1. Strigops habroptilus. 2. Cacatua Leadbeateri. 3. Palœornis torquatus.

Mr. Macgillivray says the *Megapodii* are very numerous in the Louisiade Archipelago, running about the thickets, and "calling to each other like pheasants in a preserve at home*." The sailors on board the Rattlesnake prized the eggs of these birds very much as food.

The *Megapodius Duperreyi* is found in the various islands of the Louisiade Archipelago. There Mr. Macgillivray† met with the enormous mounds which it prepares for its eggs. These mounds averaged five feet in height and fifteen in diameter, and were formed of the sandy soil of the neighbourhood, scratched up and mixed with rotten sticks and leaves. He describes the constructor of this immense fabric as being at times very pugnacious, as he frequently saw them chasing each other along the ground, running swiftly, and uttering their cry more loudly than usual. He describes the cry as consisting of "one or two shrill notes, uttered at intervals, and ending in a hurried tremulous cry repeated five or six times. The noise made by this *Megapodius* while scratching among the dead leaves for food, may sometimes be imitated with such success as to bring the bird running up within gunshot." Mr. Macgillivray found that this species procured its food entirely on the ground; and that it consisted of insects and their larvæ (especially those of ants), small snails, and various fallen seeds and fruits.

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* Voyage of H.M.S. Rattlesnake, vol. i. p. 244. † *Ibid.* vol. ii. p. 64.

The bird, when suddenly forced to rise from the ground, flies up into a tree, where it remains motionless, but on its guard; on most occasions however it trusts to its legs for escape. Mr. Macgillivray was very anxious to procure its egg, as several of the mounds showed indications of having been recently opened by the birds: he was unsuccessful, though he dug several pits three feet deep.

The Brush Turkey (*Alectura* or *Tallegalla Lathami*, Plate XV. fig. 1) is the largest gallinaceous bird of Australia. Although in all respects belonging to the order, some systematists at one time arranged it with the vultures, chiefly on account of its head and neck being bare of feathers. The bird is of a dusky brown colour, the head and neck are red, and the wattle at the lower part of the neck is of an orange-red colour. Mr. Gould has entered at length into the singular habits of this bird, and remarks that the small size of the brain, taken in connection with the extraordinary means employed for the incubation of their eggs, indicates a very low degree of organization. The Brush Turkey collects a heap of sticks and leaves, which it arranges in a conical heap; and having deposited its eggs, which are placed at some distance from each other, the small end being downwards, leaves them: the mounds become heated either by the fermentation of the vegetable matter or by the sun's rays, and by this heat the eggs are hatched. It has been supposed that several females make use of one heap, from the quantity of eggs sometimes found in one of these hatching-places: and, according to the natives*, both the male and female watch the heaps during the period of incubation, while the latter diminishes or adds to the vegetable matter from time to time. There are two specimens of this curious bird in the gardens of the Zoological Society, where the eggs have been lately hatched. They are brown birds, with large compressed tails, and seem to fly heavily; the head and neck of the male bird are very curiously and handsomely wattled, the red and yellow colours contrasting well with the sombre plumage.

The Pheasant family (PHASIANIDÆ) is distinguished by its large, arched beak, the nostril of which is covered by a smooth naked scale; the feet and legs are strong and large, and well adapted, with their horny claws, for scraping in the ground; the tarsus is generally furnished with one or more spurs; the wings are short and rounded, and not capable of long-sustained flight; the tail consists of eighteen feathers, generally well developed and often vaulted beneath, folding as it were upon itself; the tail-covers are often greatly lengthened, as may be strikingly seen in the Peacock. The males are generally much larger than the females and more brilliantly plumed; both sexes are also generally more or less wattled about the head. Most of the species of this family are natives of Asia, where they seem to abound. The Guinea Fowls (*Numida*), as their name implies, are natives of Africa; while the two species of Turkey are found exclusively wild in America. The species of *Polyplectron* (Plate XVI. fig. 2), which have two or three spurs on each leg, are natives of Asia and its islands.

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* Backhouse, 'Narrative of a Visit,' p. 425.

The birds of this family form excellent food, their flesh being more delicate than that of any quadruped. Many of the birds live with man in a state of domestication; and all of them seem capable of being adapted to ornament his grounds, and to supply him with eggs and a delicate change of food. The crow of one of these birds is, in most parts of the world, the sign to man of the approach of day:

> "While the cock, with lively din,
> Scatters the rear of darkness thin."

The common Pheasant is one of our most ornamental birds, and there is no reason why in course of time other species should not be as common; such as that very long-plumed pheasant from Japan, named by Dr. Gray after Mr. Reeve; the gorgeous Gold Pheasant of China (*Thaumalea picta*); the still more striking Amherst Pheasant (*Thaumalea Amherstiæ*, Plate XVI. fig. 3), a native of Tibet, with its curious neck-ruff of white and black plumes, like a ruff turned down. Mr. Benjamin Leadbeater figured this noble pheasant in the 'Linnean Transactions' (vol. xvi. pl. xv. and p. 129). The Countess Amherst brought two males alive with her from India in 1828: they only survived the voyage a few weeks. Mr. Leadbeater got one of these two from her ladyship, and mounted the other with that skill for which he and his son have obtained a name. The two specimens were brought from the mountains of Cochin China, and were presented by the King of Ava to Sir Archibald Campbell, who gave them to Lady Amherst. Mr. Bryan Hodgson procured specimens of this rare bird, now in the British Museum collection. We hope some day to see this noblest of the family displaying his beauty and gallantry in one of the paddocks of the Regent's Park.

The Monaul (*Lophophorus Impeyanus*) has been brought to this country; and we yet hope to see that curious Tibetan bird, the *Crossoptilon auritum* (Plate XVI. fig. 1), an inhabitant of our aviaries. It was obtained by Mr. Hodgson in Tibet, where, like most *Gallinaceæ*, it cannot be rare.

It is difficult to see of what *use* the exuberance of plumage can be to most of these birds, or the metallic lustre and bright colours with which their feathers are adorned. They may sometimes, by extending their feathers, alarm their enemies, as the peacock *has been said* to frighten even the leopard with its tail; but, generally speaking, their gorgeous clothing seems to have been chiefly intended for ornament, and to make them agreeable to their mates, as well as to gratify mankind.

Pope, in his 'Windsor Forest' (lines 111–118), has well described the brilliant plumage of the Pheasant, as well as the character of its flight:—

> "Glossy varying dyes,
> His purple crest and scarlet-circled eyes;
> The vivid green his shining plumes unfold,
> His painted wings, and breast that flames with gold.
>
> . . . .
>
> See! from the brake the whirring pheasant springs,
> And mounts exulting on triumphant wings."

Our common Pheasant crows at all seasons when retiring to roost, and repeats the call frequently during the night, and, when disturbed, during the day. It is one of those birds that may be considered as only partially domesticated with us; for, though it occasionally associates with the poultry, and will come at all hours to be fed, yet, as Mr. Waterton* remarks, this bird has "a most singular innate timidity, which never fails to show itself on the sudden and abrupt appearance of an object. I spent some months in trying to overcome this timorous propensity in the pheasant, but I failed completely in the attempt."

Peacocks (*Pavo*) are exclusively natives of the East. At least two species of these large and handsome birds are known to naturalists. In their wild state they are found in close wooded tracts, where they can easily have access to water; they roost in trees. It must be a fine sight to see from twelve to fifteen hundred of these gorgeously-plumed birds together at a time, as described by Williamson, in his 'Oriental Field Sports.' Peacock-shooting is one of the favourite pastimes of our countrymen in the East.

The Pintadoes form a subfamily of the *Phasianidæ*, characterized by the naked head, the fleshy wattles at the base of the cheeks; the short hanging tail, and the feathers above it being long, give these birds a rounded shape. There are four or five species, all natives of Africa. The most common is the Guinea Fowl (*Numida meleagris*), so well known from its slate-coloured plumage which is prettily dotted with white spots. These birds in the wild state are very cunning, and are described by Lieutenant Grant*, who met with them at the Cape de Verd Islands, as planting an advanced sentinel while the covey are feeding, to give them the alarm in case of danger. So shy are they that it is difficult to get within shot of them; the best time is to watch them when they come to drink, and as such places, especially in the dry season, are very few in number, they come there occasionally in considerable numbers. Mr. Jesse† remarks, that it is a beautiful arrangement of Providence that Guinea Fowls, which deposit their eggs on the ground, should have the shells so hard that the snakes of the country cannot break them. He says that the Guinea Fowl lays more eggs than any other bird. Although the name of *Meleagris* has been applied to the turkey, a bird of North America, and of course unknown to the ancients, the *Meleagrides* of the Greeks were Guinea Fowls. According to their mythology,

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* Essays on Natural History, first series, p. 98.

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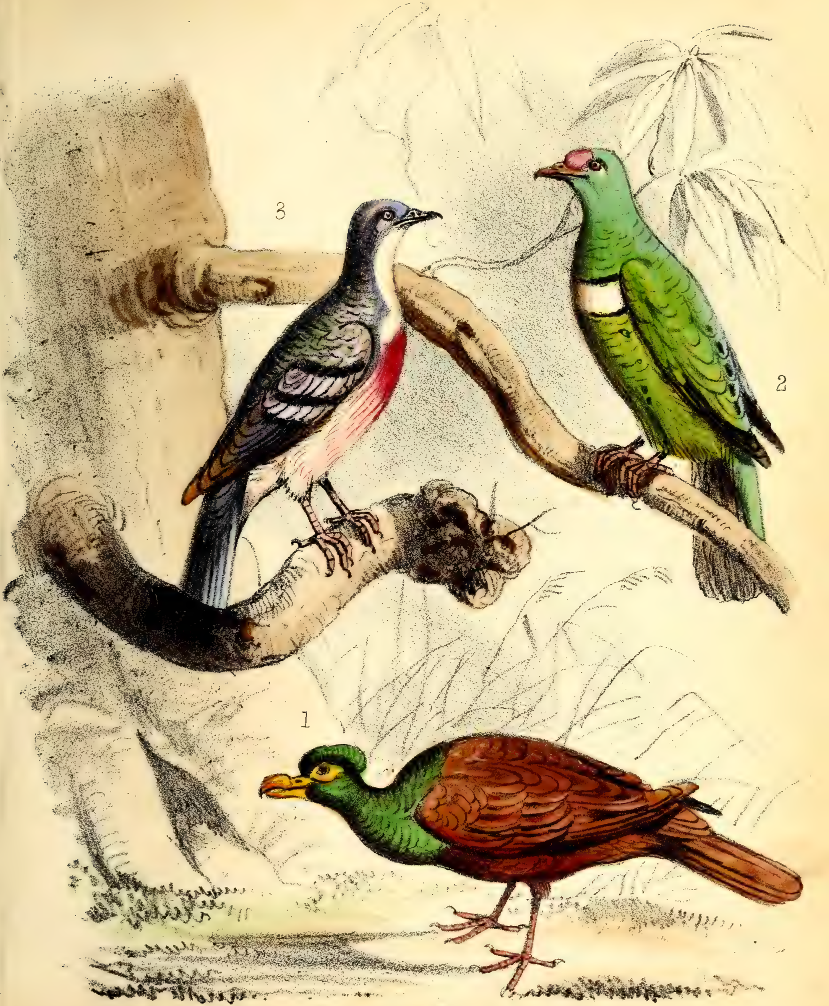
* Voyage of Lady Nelson, p. 17.

† In his edition of White's 'Selborne,' p. 311.

Plate XIV.



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1. Didunculus strigirostris. 2. Ptilinopus strophium. 3. Columba cruenta.

the sisters of Meleager were transformed into these birds, which still retain in their spotted plumage the traces of their tears!

The family TETRAONIDÆ contains the Grouse, Partridges, Quails, and allied birds. The family is, among other characters, distinguished by most of the species having a naked space, generally of a bright red colour, above the eye. Some of the genera are polygamous, like our poultry; while others, as the ptarmigan, are monogamous. The quails and their allies are celebrated for their habit of congregating in vast numbers, which they generally do when about to migrate. Most of the birds are found on the ground, but a few, such as the Colins (*Ortyx*), perch on trees: these birds are natives of America, and are often beautifully plumed. A monograph of them, elegantly illustrated, has been published by Mr. Gould. Our figure (Plate XVII. fig. 3) shows a beautiful species of this genus, the *Ortyx signifer*.

The Ptarmigans (*Lagopus*) are distinguished by their legs and toes being thickly clothed with small feathers. They are natives of the mountainous parts of Europe and North America, and abound in the Arctic regions. There are several species, most of which are remarkable for changing their plumage in winter; at this season the feathers are white, and it is with great difficulty that the bird can be distinguished when the ground is covered with snow. Some of the species shelter themselves in winter in holes, which they burrow in the snow, and may also sometimes get the berries which are covered and preserved there.

In the following picture, by the gallant Lieutenant Sherard Osborn, this bird relieves the desolation of the scene —a scene often witnessed by the Arctic voyager:—"On the road we observed old traces of musk-oxen going south. Scanty tufts of saxifrage struggled for light through the superincumbent mass; and here and there a lichen, of a bright crimson colour, appeared on the larger masses of stone. The cry of a ptarmigan was the only indication of animal life or sound that broke the stillness of this barren and solitary region*."

The genus *Tetraogallus*† is found on the lofty mountains of India, and consists of four handsome species, called Snow Partridges. The *T. Himalayensis* is about five times larger than the English partridge. Vigne, in his travels in Kashmir, met with it, and suggested that it might be readily introduced into this country. Captain Hutton says that it is sometimes sold in the markets of Cabool, and is a common bird on the snowy passes of the Himalaya. They "rise in coveys of from ten to twenty, and usually have a sentry perched high on some neighbouring rock, to give warning of danger by his loud and musical whistle." Captain Boys speaks of it as strong on the wing, and that its flights are very protracted. It is chiefly of a grey colour, the feathers edged with brown.

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* Lieutenant Osborn, 'Journal' (May 14th, 1851). Additional Papers relative to the Arctic Expedition, p. 94.

† Illustrated and described in Gould's 'Birds of Asia,' part v. (Oct. 1, 1853).

The Caspian Snow Partridge (*T. Caspius*), 'Keph-e-derra,' or Royal Partridge, of Persia, is met with on the highest summits of the Caucasus, seldom quitting the regions of snow. It runs with great agility on the rocks and the ledges of precipices, living in societies of from six to ten individuals. In autumn it grows fat, and its flesh resembles that of the common partridge. It becomes the inseparable companion of the goat, on the excrement of which it feeds during the winter months. In the Zoological Society's Gardens they had this species alive.

The most common game-bird of India is the *Francolinus Ponticerianus.* In India it is universally known to sportsmen as the '*Partridge*'; and indeed, as Colonel Sykes* tells us, it much resembles our partridge in its form and air, and in most of its habits and manners. The male birds have spurs, and are rather more pugnacious than our gentle bird, possessing a few of those martial tastes which have rendered quails so famed in China. The 'Partridge' of the East Indies sometimes perches on trees during the day, and most commonly rests on them at night: it is found in gardens and cultivated lands, but never, according to the observations of Colonel Sykes, inhabits forests.

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* Transactions of the Zoological Society of London, vol. ii. p. 5.

There is a very curiously-marked species of Indian partridge, which has the feathers at the base of the bill of a red colour, as if suffused with blood, which seems too as if it had dropped on the breast and stained it. Our figure (Plate XVII. fig. 1, *Perdix cruenta*) shows this rare species, which was brought by General Hardwicke from Northern India, and is preserved, with the rest of his noble collection, in the British Museum.

The migratory habits of the quails are well known to every one; and the immense flocks, in which they sometimes appear, have been read of by every child acquainted with the Bible. There seems no reason to doubt that the species which miraculously supplied the children of Israel was our common quail, which is still at times far from uncommon in many parts of the East. Quails are very pugnacious; and some species are caught and caged, for the express purpose of gratifying the sight of persons who like to see birds and beasts *pitted* against each other. In China and other Eastern countries these pretty little birds are often so employed. According to Burnes, nothing can exceed the passion of the Affghans for this kind of sport. Almost every boy he saw in the streets of Peshawur had a quail in his hand; and he tells us* that crowds assemble in all parts of the city to witness their game battles.

Mr. Jerdon†, in speaking of the Black-throated Three-toed Quail (*Ortygis pugnax*) of India, tells us that it is frequently caught and caged by the Mussulmans of Southern India. These people take advantage of a habit of the bird to snare it. This quail has a peculiarly loud purring call, by which the birds attract each other. Having taken a female bird, the Indians put it in a small cage, which they place on the ground in the jungle, and conceal it partially with leaves. "The cage has a small plank in front of the bars, over which an arched cover is made to fall by the snapping of some thread, placed between the bars. The bird within begins its loud purring, and any of its kind in the neighbourhood run rapidly to the spot, and commence pecking at the bars of the cage; this soon breaks the thread, and the spring-cover falls, ringing a small bell at the same time, by which the owner, who remains concealed, is warned of a capture. Fifteen or twenty are occasionally caught in this way in a single day."

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* Travels into Bokhara, vol. i.

† Madras Journal, vol. xii. p. 3.

The desert parts of Asia and Africa are frequented by species of the genus *Pterocles*, or Sand-grouse, in which the tail is pointed and the toes are naked, while the thumb, as befitting birds which run much, is small; a small ring only round the eyes is devoid of feathers. They fly with great quickness, having long pointed wings, and are altogether adapted for a life in the desert, which to them is a well-furnished home. Dr. Andrew Smith, in his admirable 'Illustrations of the Zoology of South Africa*,' has made some interesting remarks on their habits. He says that the *Pterocles gutturalis*, like the other South African species, repairs in large flocks, "at regular and fixed periods, to localities where water exists," and seeks the water about ten in the morning and three in the afternoon, at which hours the *P. tachypetes*, a native of a different district, also repairs to its watering-place. The *P. variegatus* prefers to drink during the early part of the morning; while another species, the *Pterocles bicinctus,* drinks "during the dusk of the evening and the early part of the night." Dr. Smith, whose experience as a naturalist has been gained over a wide and interesting field, which for many years he worked, has the following interesting remark:—"In such an arrangement we must admit design; as, were all the various species to experience thirst at or about the same time, both delay and difficulty would be experienced in quenching it, since, owing to the general scarcity of water in the districts they inhabit, even as it is at present, hundreds of the same species are often to be seen fringing the brink of a pool for hours together, and occasionally disputing for the first sip*." Dr. Smith (l. c. *P. variegatus*) remarks that these birds fly at a great height and suddenly descend, when they approach water or their feeding grounds, requiring sometimes to form a semicircular or circular movement before they can reach the spot on which they wish to alight. Dr. Smith found remains of grass-seeds, small bulbs, ants, and abundance of gravel in the stomachs of the species he examined.

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* *Aves*, plate iii. (*Pterocles gutturalis*).

The *Tinamous* (TINAMIDÆ) seem in South America to represent the partridges of the old world. There are several species, from the size of a quail up to that of a pheasant, and all are remarkable for having a long and slender neck, while their tail is reduced to a very small size; the beak is long and slender, and the hind toe does not reach the ground. Mr. Darwin, at Maldonado, fell in with great numbers of the *T. rufescens*. These birds do not go in coveys like our partridges, nor do they conceal themselves when come upon. Mr. Darwin describes it as a very silly bird; and says that a man on horseback, by riding round and round, and approaching closer each time, may knock on the head as many as he pleases. The flesh when cooked is delicately white and very good*. The Tinamous feed chiefly on seeds, fruits, and insects. Unlike the partridge, the Tinamou, at least the small Demerara species, lays only one egg, which it deposits in a little hollow, scratched at the foot of a tree.

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* Illustrations of the Zoology of South Africa, by Dr. Andrew Smith, vol. ii. *Aves.* (1840.)

Waterton, during his wanderings (Fourth Journey, p. 286), fell in with the Great Tinamou, and tells us that it invariably roosts in trees. Though the feet in this bird are very small in proportion to the bulk of the body, so as to be of no use to it in grasping a branch, and the hind toe does not reach the ground even in walking, and cannot assist the bird in perching, yet he observed a particular structure in the leg which enables it to sleep with security on the trees. The back part of the leg, below the knee, is flat and somewhat concave, and furnished with strong pointed scales, which are very rough, and catch your finger if you move it along from the knee to the toe; these stick into the bark, and must assist the bird much in retaining its position. Our traveller says that this bird at the close of day utters a loud, monotonous, plaintive whistle, and then springs into the tree. In the Guiana forests, the same observing journalist records that, before dawn, and sometimes even at midnight, this whistle may be heard from the depths of the forest. The flesh of the large tinamou is delicious; and as it is nearly as large as the black cock, the quantity of it is not to be despised.

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* Journal, p. 51.

Among the mountains of Bolivia the traveller finds occasionally, as he would do the grouse or ptarmigan, a pretty bird allied to the tinamous, and named after Mr. Pentland, who first discovered it (*Tinamotis Pentlandi*). Mr. Bridges* found this bird close to the snow, at an elevation of 14,000 feet, looking for its food among the stones in grassy places on the sides of the Andes. When flushed, it uttered a shrill and loud whistle and flew for about a mile, getting up rapidly and shooting off in a horizontal direction. Its egg, he tells us, is light green and very blunt at the end; it has none of the polished texture so characteristic of the eggs of the tinamou. Mr. Bridges found, on the eastern side of the Andes, that elegant species discovered by D'Orbigny, and named *Tinamotis elegans;* he tells us that the Indians take this bird easily, by walking round and round it in gradually-contracting circles, until they are near enough to slip a noose, at the end of a long cane, over its head.

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* Proceedings of the Zoological Society, March 23, 1847.

Order STRUTHIONES.

We now come to birds generally of large size, whose wings, when present, are used chiefly as sails, to help them in running. Their powers of motion depend on their legs; and we find these organs specially adapted, in length and strength, and in the condition of the toes, to enable them to run over the ground with ease. Their bones too are heavier than those of birds in general. Many of them seem to be gradually getting rarer as civilization extends; and some, such as the Dinornis of New Zealand, are now extinct. Sir Stamford Raffles, we remember, in one of his letters, writes of the cassowary as being now confined to one smallish island in the Eastern Seas; so that in course of time, and perhaps at no very remote epoch, we may know of ostriches, emus, and cassowaries only by books, drawings, and specimens preserved in museums.

They are hardly susceptible of being domesticated, and if domesticated could not be of much use. Mr. Miers* speaks of having seen a pair of the South American *Rhea,* in 1819, which a woman had tamed, having reared them from nestlings. The late Earl of Derby, in the 'Proceedings of the Zoological Society' for February 23, 1847, communicated some observations on the domestic habits of these birds. He found the Australian Emu to be strictly monogamous, the male too not approving any other female but the favoured one coming near the nest. The South American Emus (*Rhea*), on the contrary, are polygamous; the male selects the place for the nest, and forms it; he collects together the eggs and sits on them. Whether this be the habit of the bird in a state of nature or not, it is the habit of it as observed in the large enclosures at Knowsley, in Lancashire. The late Earl adds that the *Rhea*, in collecting together the eggs of his most unmatronly mates, inserted the beak between the egg and the ground and rolled it along, "by the assistance of his long neck, exactly in the way that a boy would roll a cricket-ball along by the aid of a long stick with a hooked end to it."

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* Travels in Chili, etc., vol. i. p. 212.

It was at one time believed that the eggs of ostriches were hatched by the warmth of the sun*; but correct observation has shown that "the parent bird forms a rough nest, in which she covers from fourteen to eighteen eggs, and regularly sits on them in the same manner as the common fowl does on her chickens, the male occasionally relieving the female*." Many of the natives of the country between Tripoli and Mourzouk subsist by hunting ostriches: they procure the greatest number during the breeding season. It is the custom in some of the towns to keep tame ostriches in a stable, and in two years they take three cuttings of their feathers. Captain Lyon believes that most of the white feathers sent to Europe are from tame birds, as in such wild birds as he has seen, the plumes were so ragged and torn, that not above half-a-dozen perfect ones could be found: the black feathers, being shorter and more flexible, are for the most part good.

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* "Hast thou expell'd the mother from thy breast,
And to the desert's mercies left thy nest?"

The eggs of the ostrich weigh three pounds each and are good for food, but it is chiefly as ornaments that they are employed. How many a child has wondered at so large an egg when visiting a strange house! In the East they are much used as ornaments, being sometimes hung up in places of worship along with lamps. As the learned Harmer† remarks, Dr. Richard Chandler mistook them for ivory, in his

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* Captain Lyon, 'Travels in Northern Africa,' p. 77.

† Observations on divers Passages of Scripture, vol. iv. p. 336 (ed. 1787).

'Travels in Asia Minor,' when he speaks of the Turkish mosque at Magnesia being ornamented with lamps pendent from the ceiling intermixed with balls of polished ivory (p. 267).

The flesh of the emu (*Dromaius Novæ Hollandiæ*) is eaten by the natives of New Holland, and travellers speak of it as being meat not to be despised. Dr. Leichhardt, in his overland journey from Moreton Bay to Port Essington, found that it supplied his party with excellent food. In his journal he says:—"We enjoyed a most beautiful moonlight night over a well-grilled emu bone with so much satisfaction, that a frequenter of the restaurants of the Palais Royal would have been doubtful whether to pity or envy us*."

The young of the emu is prettily striped with brown and white; the nest consists of a few sticks scraped together with little design; in this are deposited several eggs, which are of a deepish green hue. When they can be procured they are highly esteemed for the table, and are much prized by the natives. The shells, when mounted with silver or some other white metal, form elegant ornamental vessels. Like the South American *Rhea*, emus when necessary cross rivers, as they can swim well.

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* Leichhardt's Journal, p. 368.

Large as are the various species of *Struthionidæ* at present living on the globe, they were surpassed in size by some members of the group, which seem to have become extinct in very recent times. One of these belongs to the genus *Dinornis*, and inhabited, along with smaller species of the genus, the islands of New Zealand, where remains of its bones, and even of its eggs, are not unfrequently met with*. Mr. Walter Mantell found in the volcanic sand of New Zealand portions of the egg of the Moa,—so large, that he says his hat was only large enough to have served for an egg-cup to it. These eggs are thin compared with the ostrich, and much smoother†. In Madagascar there once lived another larger Struthionidous bird, from the remains of which it is concluded that specimens were from nine feet nine inches high to twelve feet and upwards. Captain Abadie, in 1850, saw in the hands of a Malgache a gigantic egg, perforated at one of its ends, and which the natives use for different domestic purposes. These eggs are six times the size of those of the ostrich; they are sixteen and a half larger than those of the cassowary, and it is estimated that they would hold the contents of a hundred and forty-eight eggs of the domestic fowl. To this gigantic bird the name of *Æpyornis maximus* has been given*. A bird of these dimensions, and confined to an island however large, must long ago, like the dodo, have become extinct.

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* See Professor Owen's description of *Dinornis* in the 'Transactions of the Zoological Society of London.'

† Professor Owen, Paper read at Zoological Society, January 27, 1852.

Among the most interesting genera of the family *Struthionidæ* is *Apteryx*,—a genus founded on a long-beaked bird from New Zealand, of which two new species (*A. Owenii* and *A. Mantellii*) have been lately described. An *Apteryx* (*A. Mantellii*) has been for some time alive in the gardens of the Zoological Society. We have only seen it during the day, when it sleeps; and a heavy enough 'lump' it seemed to be, more nearly resembling some quadruped, with its rough hair-like feathers, than a regular, beaked, egg-producing biped. It is said to use its beak much in walking, propping itself with it, its legs being placed very far behind. Mr. Owen has given, in the 'Transactions of the Zoological Society,' a most detailed account of its structure and skeleton, and from him may be expected an account of the habits of this nocturnal creature. The specimen at the Zoological Gardens is fed on chopped meat and worms.

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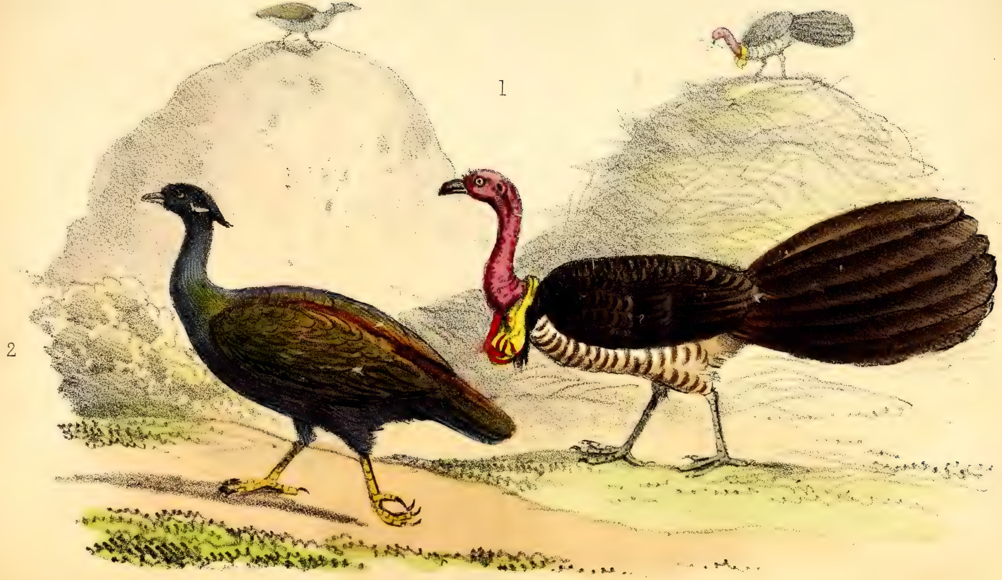
* Isidore Geoffroy-Saint-Hilaire, in 'Comptes Rendus,' 1851, t. 32, No. IV. p. 101.

Plate XV.



Bauerrichter & C^o lith.

The egg of the *Apteryx*, like that of the *Megapodius*, is large compared with the bird. Professor Owen exhibited before the Zoological Society, one sent to him by the Rev. William Cotton, M.A., from the north island of New Zealand. Its greatest longitudinal circumference was one foot and nine lines; its transverse circumference was ten inches, its length being four inches and ten lines. It was of a dull, dirty, greyish white; and it was very thin, not being more than one-eighth of an inch thick. Mr. Owen exhibited an embryo, in which the feet, with their well-developed claws, were well formed; the beak showed its long shape, its terminal nostrils, and the slight expansion at the point, which forms the end of the crutch in the mature bird. The learned professor inferred that the young *Apteryx* must be excluded unusually well developed, with a clothing very like that of the parent, and capable of using its beak and limbs for its support*.

The family containing the Bustards (*Otidæ*) is a specially interesting one, from its forming, as it were, a link connecting the gallinaceous birds with the grallatorial. These birds frequent, by preference, dreary heaths and ground not yet inhabited by man. The bustards we have seen in the Zoological Gardens—limited field for birds so essentially constructed for vagabond habits—have a large body, which seems at first sight too great for their legs. On closer inspection, we remark the great strength and comparative thickness of these supports, and the firm compact toes and absence of the hind one, which enable them to run with such swiftness. Their heads being large, and their eyes proportionate to them, give them a peculiarly meditative look; added to, doubtlessly, by that want of foot exercise so congenial to their habits in a state of nature. Though the plumage in many of the species is sombre, and well fitted to keep them from detection, many of the Asiatic and African kinds are very showily arrayed; the males of some of these bustards having banner-like displays of feathers about their neck or elsewhere, with deep black or greyish-blue feathers covering the under parts of their body. They are birds generally with a stoutish depressed bill; and having capacious stomachs, they soon acquire plenty of fine muscle, and often get very fat. The smaller Indian species, called "Floriken," are much sought after by sportsmen.

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* Proceedings of the Zoological Society, January 27, 1852.

The Honourable Daines Barrington, in his 'Miscellanies*,' tells us that Dr. Douglas was, he believed, the first to discover, in the neck of the male bustard, a bladder capable of holding two quarts of water: the hen has no such provision. "The male therefore seems to be provided with such a receptacle to be used while the female is sitting, or whilst her young brood cannot move far from the nest." Daines Barrington goes on to say that a gentleman, long resident at Morocco, told him that the male bustard, when attacked by hawks (for the inhabitants frequently fly their hawks at bustards), makes use of this reservoir of liquor against these assailants, and commonly thus baffles them."

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* Note, p. 553.

Mr. Yarrell has lately dissected a male bustard, and has found no such bladder, though he seems to think that, at certain seasons, there may be some dilatation of parts about the head in the male, which have given rise perhaps to the observations of Dr. Douglas.

Order GRALLATORES. The Wading Birds.

This order is composed of several families of birds, all more or less marked by the great length of their legs. The lower portion of the tibia is devoid of feathers, and covered with scale-like plates, closely resembling those of the tarsus. This structure enables the birds to wade into the water a considerable depth without wetting their feathers. It is most generally in the water that they procure their food, which they seize with their neck and beak: these parts in length correspond much with the legs.

The outer toe of their feet is generally united to the middle one by a short membrane, which connects them at the base. The wings of the wading birds are generally long, and support them well in flight; many of them, especially those which migrate, can fly to very great distances. They generally stretch out their long legs behind them when flying, unlike most other birds, which in flight have their legs doubled under their belly: their tails are generally short, so that the long stretched-out legs help much to balance the body during their passage through the air.

The Plovers, Bitterns, Cranes, Herons, Snipes, and Rails are characteristic examples of this extensive order of birds, which is widely distributed over the world. Some of the genera, such as the Herons, generally build their nests in society on trees; the more aquatic genera form their nests among reeds in marshy places; while others deposit their eggs in stony or marshy places, where they are well concealed from view by their colour and blotched markings, resembling the ground on which they are placed.

Some of the species are extremely useful in warm countries, where they enact the part of scavengers; and all of them are more or less useful to man, their eggs, in many cases, being much sought after: few, if any of them, injure his crops; and most of them love solitary places, which are often lightened up by their presence.

The family CHARADRIADÆ contains a great many birds of small or at least moderate size, and generally with a very quiet though pretty plumage. They generally want the hind toe, or, when it is present, it is so small as not to reach the ground; and have a compressed bill of no great length, which is swollen near the tip. They have for the most part long pointed wings, and their flight is rapid. To this family belong the Thick-knees (*Œdicnemus*), which have, at first sight, some resemblance to the bustards, and, like them, live in dry stony districts, where they find slugs and insects, their favourite food. The Coursers (*Cursorius*) also are placed here: they are birds well suited, from their sandy colours, to escape detection in their chief haunts, and have acquired their name from their great swiftness of foot. The Glareoles are distinguished by their long pointed wings, and the tail being generally forked, while the legs are of no great length, and the beak is short, conical, and arcuated throughout: the species are found in troops. The most characteristic birds however of the family are the Plovers and Lapwings. Many and great are the artifices employed by these amiable birds to distract the attention of the intruder from their nest; some of them spread out their wings and tail, dragging themselves along as if they were lame or wounded, and whenever the eye of the disturber is turned from them, they immediately resume their sprightly posture, and generally in this way draw off attention from their nests. One of these birds is the Kildeer Plover of North America (*Charadrius vociferus*), so called from its noisy vociferations resembling that word repeated. Wilson describes it as retreating to the sea-shore during the severity of winter, when the ground is covered with snow. In spring it resumes its favourite feeding-grounds on the banks of rivers. Its nest is generally, like those of its congeners, very slight, being a mere hollow, with such materials drawn in around it as happen to be near; in this the female usually deposits four cream-coloured eggs, thickly blotched with black. The American ornithologist says:—"Nothing can exceed the alarm and anxiety of these birds during the breeding season; their cries of *kildeer! kildeer!* as they winnow the air overhead, dive, and course around you, or run along the ground counterfeiting lameness, are shrill and incessant. The moment they see a person approach, they fly or run to attack him with their harassing clamour, continuing it over so wide an extent of ground that they puzzle the pursuer as to the particular spot where the nest or young are concealed; very much resembling in this respect the lapwing of Europe. During the evening, and long after dusk, particularly in moonlight, their cries are heard with equal violence, both in the spring and fall. From this circumstance, and their flying about both after dusk and before dawn, it appears probable that they see better at such times than most of their tribe. They are known to feed much on worms, and many of these rise to the surface during the night. . . . They sometimes rise to a great height in the air; they are fond of wading in pools of water, and frequently bathe themselves during the summer; they usually stand erect on their legs, and run or walk with the body in a stiff horizontal position; they run with great swiftness, and are also strong and vigorous in the wings; their flesh is eaten by some, but is not in general esteem." During winter these birds, as before observed, descend the rivers to the sea-shore, where they may be seen in small flocks of from ten to twelve; at this time they are quiet, and are not very easily approached.

The Lapwings of India, like those of Europe and Australia, have the same shrill cry, resembling "pee-wit," or "did he do it?" and, like our pretty species, often annoy the sportsman* by hovering about him, and thus attracting the attention of game birds to his presence in their haunts.

Many of the lapwings have spines on their wings, and some are curiously wattled about the head; these species are found in hot climates, but do not seem to differ much in their habits from the other members of the family. The spine-winged species are well able to defend themselves and their young from the attacks of birds of prey or reptiles.

The Oyster-catchers (*Hæmatopus*) form a well-marked genus of this family, with their strong and rather long oyster-knived beak, and shortish, strong legs, of a bright-yellow or red colour. The visitor to Shetland, or to many other parts of our sea-coasts, cannot fail to observe our lively black-and-white-plumaged oyster-catcher "paidling" on the shore, and flying close to the water from one island to another, or across a sound three or four miles wide. Mr. Gould describes a sooty-black species from Van Diemen's Land and the south coast of Australia (*H. fuliginosus*), which he regards as distinct from the black species found at the Cape of Good Hope and Cape Horn; so that the species of the genus, like most aquatic birds, are widely dispersed. The White-breasted Oyster-catcher (*H. longirostris*) is more nearly allied in appearance to our species, and resembles it in its habit of frequenting low muddy flats, under the influence of the tide; where, when the tide has retired, it picks up molluscs, crabs, and other creatures stranded there*. During the breeding season, Mr. Gould observed that it resorted to small islands and rocky capes, for the purpose of rearing its young. These are soon capable of running, and are very cautious birds, secreting themselves, when alarmed, behind a stone, or in a crevice, where their colour helps to conceal them. The old birds keep flying backwards and forwards, uttering their loud and clamorous cries, in order to decoy the intruder.

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* Jerdon on *Vanellus Goensis,* in 'Madras Journal,' vol. xii. p. 214.

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* Gould's 'Birds of Australia,' vol. vi.

The Sheathbills (CHIONIDIDÆ) form a small family of birds, distinguished by their short toes, scutellated tarsi, and by the thick conical beak, the base of which is enveloped in a waxy sheath-like structure, whence the only genus has acquired its English name.

The first-described species is entirely of a white colour, and is a native of the Falkland Islands, where it was discovered on one of Cook's voyages. Mr. Macgillivray* informs us that it is there called the Rock-dove; and that, from its snowy plumage, it forms a conspicuous object along the shores. Though not web-footed, a specimen he shot took voluntarily to the water when wounded, and swam off. Its habits are those of the oyster-catchers; and in its structure Blainville has shown it resembles those birds, although at one time it was arranged with the gallinaceous birds and pigeons, and by some naturalists was even associated with the web-footed birds. The stomachs of two specimens, examined by the naturalist of the Rattlesnake, were found to contain seaweed, limpets, and small quartz pebbles.

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* Voyage of the Rattlesnake, vol. ii. p. 110.

Dr. Hartlaub has described a second smaller species of this curious genus.

Swamps and the banks of rivers are in many countries, temperate and tropical, decorated and enlivened by long-legged birds, with long necks and bills, which seem to love solitude, and certainly find ample supplies of food in solitary places. Most of our readers must have seen in this country the Heron (*Ardea cinerea*), one of the group we refer to. Few however have seen another bird of the family, the Bittern (*Botaurus stellaris*), though some living in marshy places are not unfamiliar with its booming cry. When this country was less cultivated, and when marshes and swamps covered it in many places, these birds were more abundant; and species now *raræ aves*, such as the Spoonbill (*Platalea*), the White and Black Stork (*Ciconia alba* and *C. nigra*), and even the Crane (*Grus cinerea*), seem to have been far from uncommon. In the swamps of Florida and Carolina, and in other similar places both in North and South America, great numbers of species of these birds are found; and those who read the works of Alexander Wilson and of Audubon are familiar with the descriptions and figures of the various Herons, Bitterns, and Egrets.

Australia still contains, and long will contain, numerous species of the family ARDEIDÆ, from the stately slaty-grey-coloured Crane (*Grus Australasianus,* Gould), called Native Companion by the colonists, to its White Spoonbills, one (*Platalea flavipes,* Gould) with yellow beak and legs, the other (*Platalea regia,* Gould) singular from its coal-black face, beak, and legs; both birds formed as it were partly to ornament the margin of a stream or marshy inlet, where their large flat bills find ample occupation in securing frogs, small fish, insects, and mollusca. The rivers and lagoons are decorated by the presence of the Spotless Egrets (*Herodias immaculata*); while the Blue Reef Heron (*Herodias jugularis,* G. R. Gray), first discovered by Forster on Cook's voyage, prefers to dwell on rocky shores. This species finds on the New Holland reefs abundance of crabs and shell-fish. Even an island on the coast is named "Heron Island" from their abundance. Associated with it, but vastly different in colour, is the White Reef Heron (*Herodias Greyi,* Gray).

Willughby has graphically detailed some of the leading peculiarities of the Herons, which are more or less applicable to most of the members of the family *Ardeidæ:*—"They have very long necks; their bills also are long, strong, ending in a sharp point, to strike fish and fetch them from under stones or brinks; long legs, to wade in rivers and pools of water; very long toes, especially the hind toe, to stand more firmly in rivers; large crooked talons, and the middle serrate on the inside, to hold eels and other slippery fishes the faster, or because they sit on trees; lean and carrion bodies, because of their great fear and watchfulness."

The delicate Marabou feathers, which decorate the head-dresses of the fair, are the under tail-coverts of large species of those big-billed, repulsive-looking storks with bare heads, which are common in West Africa and in India. The Adjutants, as these birds are called in India, are peculiarly useful as scavengers, clearing away carrion of every description. Beneath the middle of the throat they have a large fleshy appendage, which, with their nearly bare heads and large, high beaks, contributes much to the ugliness of their look. They sometimes capture birds on the wing by means of this large, awkward-looking bill.

The Crowned Crane of South Africa (*Balearica pavonina*), with its curious, bushy, bristle-like, barbless feathers, is regarded by the Kaffirs, in some parts of South Africa, as a sacred bird. Dr. Smith informs us* that if one should happen to be killed, even by accident, the only thing which will satisfy the people alluded to, is the slaughtering of a calf or young cow as an atonement. From this circumstance the bird is often called the Kaffir Crane.

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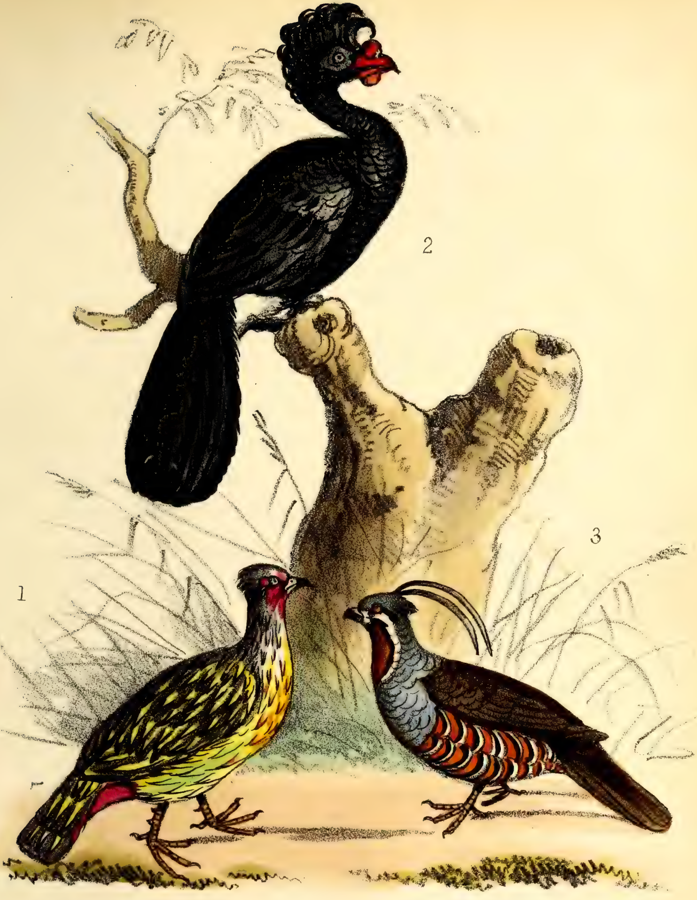
* Catalogue of South African Museum, p. 36.

The favoured visitor to Knowsley in 1848, could not fail to be struck with the loveable familiarity of a tallish, soft-plumed bird, of which there were several specimens running about in the courts of the Earl of Derby's aviary. There seemed to be two well-marked varieties of this bird: naturalists perhaps regard them as species. The bird is called the Trumpeter, and has acquired the appellation, as well as the specific part of its Latin name (*Psophia crepitans*), from the curious noise it can produce. Mr. Blyth informs us that its trachea is much elongated, and continued under the skin of the abdomen, a position which occasions the voice to appear as if it came from that part. Its head and neck are invested with peculiarly soft downy feathers, and the space around its eyes is devoid of all covering.

In Demerara, Waterton tells us, it is named *Waracaba*, and there the wanderer falls in with flocks of from two to three hundred. They run with great rapidity, and in their wild state live in the woods, where they subsist chiefly on fruits and seeds; they are said to nestle on the ground, at the foot of trees. The trumpeters are easily tamed; and when trained, follow their master in his walks, showing him



Bauerrichter & Co lith.

1. Perdix cruenta. 2. Crax Yarrellii. 3. Ortyx picta.

nearly as much affection (apparently) as his dog. They are trained to protect his property, and do really defend young poultry from the attacks of hawks; and, though amiable to man, the trumpeter will allow no rival species of bird or animal near his throne; for, though spurless, "such," says Waterton, "is their high spirit and activity, that they browbeat every dunghill-fowl in the yard, and force the Guinea-birds, dogs, and turkeys to own their superiority" (p. 145). The trumpeters have short wings, and consequently fly with great awkwardness, and but seldom; they run however with great swiftness.

There is another South American bird, in habits and structure resembling the herons, but at once distinguished from them by its great wide bill. This bill consists of two mandibles, shaped like the bowls of two spoons placed together; their concave sides being in contact. The upper mandible has a pointed tooth on each side at the tip. One species is known, the common Boat-bill (*Cancroma cochlearia*); it feeds chiefly on fish, for which it watches when perched on branches of trees by the sides of rivers.

One of the largest species of the order *Grallatores* is the gigantic *Balæniceps*, lately described by Mr. Gould. Dr. Müller saw two specimens of this bird rise from one of the islands near Chartum, on the White Nile, but was unable to shoot them; but he afterwards was offered specimens at Chartum*, so that we are sure of its locality. This bird has an enormously large spoon-shaped bill, somewhat like that of the boat-bill, and ending in a strong hook; the nostrils are much extended longitudinally; there is a fold of skin beneath the under mandible, which probably, as in the pelican, is capable of being extended into a pouch; the toes are without webs. The only known species (*B. rex*) is of an ashy-grey colour, paler on the belly and thigh.

The Cariama (*Dicholophus cristatus*) is a large bird, somewhat allied to the trumpeters: the beak is longer and somewhat hooked, giving the head somewhat of the look of a bird of prey; the legs are long, and have three shortish toes, and a hind toe, which is short and elevated: its chief food consists of lizards and insects. Mr. Gardner† frequently met with this bird when passing through bushy grassy tracts in some parts of Brazil, and was struck with its loud cries, which it continues from early dawn till night; the sound produced he compares to the yelping of a dog. The bird generally goes in pairs, and keeps much to the long grass, amongst which it finds its food. It seldom flies, but runs with great swiftness; the female lays two eggs, and forms her nest in low trees: the flesh is not much esteemed, according to Gardner; but other travellers give a favourable account of it, and even say that the bird is domesticated on this account.

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* Jardine's 'Contributions to Ornithology' for 1852.

† Travels in Brazil, p. 423.

Some of the Cranes fly in great flocks. Mr. Elliott of Wolfelee* says of the elegant Demoiselle Crane (*Anthropoides virgo*), so much admired in our Zoological Gardens, for its lady-like aspect and delicate graceful step, that in India it flies "in vast flocks of from fifty to a hundred, and even five hundred, with great regularity of arrangement, in a long line, a few of the leading ones disposing themselves in another line at an angle, varying from a right to an acute one with it." They fly in this way when they are in progress, even during the day, when disturbed on the banks of the rivers, which they decorate and render lively by their presence; these birds may be seen circling overhead at a great height, but still in a regular order of line. Unlike the herons, the cranes would seem to be fonder of vegetable food than animal. Mr. Jerdon mentions that when a hawk pounces on it, its mates generally come to its assistance;

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* Notes quoted by Jerdon, 'Madras Journal,' vol. xii.

and that the hawk, to avoid being wounded by the stroke of the sharp, much-hooked inner claw of this crane, strikes it on the back and wings. The bird never seems to attack with its beak, as herons and bitterns do.

The regularity of the return of the Stork to the shores of the Mediterranean in summer is proverbial. The Scriptures say, "The stork in the heaven knoweth her appointed times" (Jer. viii. 7).

A recent able scientific traveller* thus writes of the stork:—"March 23. . . . We saw several storks today for the first time. The regularity with which these birds return to their summer quarters is a very curious fact; as each successive year witnesses their return almost on the same day. At Smyrna they generally appear on the 9th of March; and, when I was there on the following year during that month, I saw them on the 10th for the first time. They are much protected by the Turks; and, independently of the superstitious motive that a house on which they build is insured against fire, they are of great use to the peasant and the farmer, by following the plough, and devouring the grubs as they are turned up." Storks also add much to the interest of many a scene in the East. Thus the same traveller*, writing of the konak of the Agha of Tacmac, says:—"Hundreds of storks, in undisturbed possession, had built their nests upon its ruined top; and, with their noisy clattering and constant fluttering, added considerably to the interest of the scene before us."

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* William J. Hamilton, Esq., 'Researches in Asia Minor, Pontus, and Armenia,' vol. i. p. 70.

At one time the stork seems to have been far from an uncommon bird in this country: Mr. Blyth seems to think that it might again be common, were it not that every pair is shot soon after making their appearance, which prevents the founding of a colony. Mr. Waterton too, in his 'Essays on Natural History,' expresses the same opinion. How pleasing it would be to see the picture given by Thomson in his 'Autumn,' realized in many parts of this country, where these handsome and useful birds could still find abundance of their favourite food!

"Where the Rhine loses its majestic force
In Belgian plains, won from the raging deep
By diligence amazing, and the strong
Unconquerable hand of liberty,
The Stork-assembly meets; for many a day
Consulting deep and various, ere they take
Their arduous voyage through the liquid sky.

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* Vol. i. p. 134.

> And now, their route design'd, their leaders chose,
> Their tribes adjusted, clean'd their vigorous wings,
> And many a circle, many a short essay,
> Wheel'd round and round, in congregation full,
> The figured flight ascends, and, riding high
> The aërial billows, mixes with the clouds."
>
> '*Autumn,*' lines 849–861.

One of the Javanese Herons, described by Dr. Horsfield*, is very handsome, and well deserves the specific epithet (*Ardea speciosa*) by which he has distinguished it. Its white wings, tail, thighs, throat, and crest contrast well with the deep-black long plumes of its back, and the rusty-red colour of the body; the long beak is pale at the base and black at the tip. In Java it is a common species, but is more particularly met with there in the rice plantations, during the rainy season, when they are inundated, and furnish, with their fish, frogs, and insects, a good field for food. It builds its nest on shrubs and trees; the young are occasionally taken, and may be not unfrequently seen in a domesticated state in the villages situated near rivers and lakes. The eggs of this heron are collected and sold in the markets, and its flesh is sometimes eaten by the natives.

The Countess of Blessington, in some lines on the portrait of a beautiful lady, has compared her to the Egret, in the following pretty lines:—

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* Zoological Researches, Java, No. 7.

> "They call that bird an Egret, whose light plume
> Fans the spring-zephyr's delicate perfume;
> Whose snow-white bosom, in fine lace-work set,
> Is circled with a feathering coronet;—
> A queen-like bird! the slenderest, purest thing
> That drops on earth, or frolics on the wing,
> Or wanders where the limpid waters rise,
> Or haunts the woods with birds of paradise*."

Among the Ibis group is a singular genus, called *Anastomus,* from an open space being left on the cutting margin of the beak, even when the mandibles are closed at the end. From the studies of Messrs. Jerdon and Elliott in India, it would seem that no such open space exists in the young birds, and that it is caused in the adult birds by their constantly feeding on the animal of a fresh-water mussel (*Unio*); seizing the shell with their beak, and crushing it to get at the contents, wears, it would appear, in course of time, the edges of the mandibles.

One species is very common in India, the *Anastomus Coromandelicus,* or Indian Shell-eater (Plate XVIII. fig. 1).

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* Lines on the Portrait of the Marchioness of Aylesbury. Heath's 'Book of Beauty,' 1840, p. 13.

The next family, the *Snipes,* named from its typical genus *Scolopax* (SCOLOPACIDÆ), is distinguished by the great length and slenderness of the bill. Some authors have given the family the name of *Longirostres,* from this peculiarity. The bill, unlike that of the herons, is feeble and flexible, at least in most of the genera. Its tip is covered with a soft, very sensitive skin, of great use to the birds, whose usual mode of getting their food is to push the beak into soft earth or mud, for the worms, grubs, and insects which are generally found there; the hind toe is joined to the tarsus, above the level of the fore toes, and, being short, does not reach the ground; in some of them the hind toe is wanting. In this family are placed the Godwits (*Limosa*), which have a straight bill, and the outer toes webbed at the base; their legs are considerably elongated, and the various species frequent salt-marshes and the shores of the sea, where they find, among the annelides and smaller crustacea, abundant supplies of food. In the breeding season their plumage, on the under parts, acquires a rufous tint. The various godwits are gregarious in their habits, and even social. Wilson mentions that the American species, though a shy and cautious bird, is much attached to its kind: if one of the flock be wounded, the rest are immediately arrested in their flight, and make so many circuits around their maimed comrade, that the sportsman has an opportunity of making great havoc among them. The various species of *Totanus* have a round, pointed, solid beak, the groove of which only extends half its length: during the breeding season they show great anxiety and affection for their eggs and young; the eggs of the *T. semipalmatus,* in every instance which came under the observation of Wilson, were placed, during incubation, in an almost upright position, with the large end uppermost; and this appears to be the position of the eggs of many other kinds of birds which breed in marshes. The Avosets are characterized by their beak being curved upwards, a circumstance from which is derived their name, *Recurvirostra:* their feet are also webbed nearly to the end of the toes.

In this family too come the various species of Sandpiper (*Tringa*), in which the tip of the beak is depressed, and the nasal furrow is very long; the toes have no webs at the base, and the legs are but of moderate length. Closely allied to them is the genus containing the Ruff, which has acquired its name, generic and specific (*Machetes pugnax*), from the combating propensities of the males in spring. At this time the head is covered with red or yellow papillæ, and the neck has a collar, or ruff, of elongated feathers, from which they derive their English name. Most of the birds of this family are highly esteemed as food.

The Snipes and Woodcocks have a straight beak, which is slightly curved at the tip, which, being soft, after death contracts and becomes dimpled, like the end of a thimble. Mr. Yarrell has well described the structure of it in his 'British Birds.' He says:—"If the upper mandible be macerated in water for a few days, the skin, or cuticle, may be readily peeled off; and the bones, thus laid bare, present a similar appearance. The external surface presents numerous elongated, hexagonal cells, which afford, at the same time, protection and space for the expansion of minute portions of nerves, supplied to them by two branches of the fifth pair; and the end of the bill becomes, in consequence of this provision, a delicate organ of touch, to assist these birds when boring for their food in soft ground; this enlarged extremity of the beak possessing such a degree of sensibility as to enable these birds to detect their prey the instant it comes in contact with it, although placed beyond the reach of sight." The head in the snipes and woodcocks is compressed; and this, joined to the backward position of their large eyes, gives these birds a very stupid air.

It is chiefly at night that they feed; the colour of their plumage, consisting of various shades of brown and ochrey yellow, assists much in concealing them from view in the retired swampy places which most of the species frequent.

The snipe in Iceland has not, in all instances, the shyness for which the species of this country is so peculiar. Sir George Mackenzie saw it, in 1810, "associating, as it were, with the eider ducks; and sitting on its eggs within a hundred yards of the house at Vidöe*."

The late Professor Macgillivray has thus, no less truly than pictorially, described the habits of several of the British species of this family:—"Who that has often visited the shores of the ocean, wandered along the extended sand-beaches, on the margin of which the waves terminate their career in foam and uproar, or visited the muddy estuaries, alternately filled and emptied by the periodical floods, has not stood to gaze upon the flocks of tiny birds that were busily picking up their food from the moist ground, or wheeling, as if in sport, their devious flight, now skimming the surface of the water, now rising high above the breakers, and then shooting far off to sea, to visit a distant part of the coast? How often, in visiting a sedgy pool surrounded with marshes, have we been saluted, but in no friendly wise, by the shrill clamour of the long-billed and sharp-winged birds, which had placed their nests on tufts too remote to be reached! Again, on the long range of heathery hills, that we had traversed for many a weary mile, we have come, very unexpectedly to us, and with no welcome from its occupant, upon the nest of the lonely curlew, which fluttered from among our feet in silence and terror, until, reaching a safe distance, she began to entice us away from her treasure, by displaying a broken wing and shattered leg,—taught, in fact, by instinct, to act a palpable untruth. Many pleasant sights have we seen on these solitary rambles:—here the four spotted eggs of the dunlin, so like in colour to the surrounding ground, that you wonder how the eye has distinguished them; here the timid young of the same bird, squatted among the short heath; there a flock of godwits thrusting their bills into the mud; and again, the gliding and low flight of the beautiful white-breasted tatler, as, skimming by the margin of the quiet lake, it emits its shrill and reiterated cries[*]." This graphic passage is equally applicable to birds of the same family, inhabiting the most distant parts of the world; and as they resemble each other in manners, so do they nearly agree in form and colour.

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* Travels in Iceland, by Sir George Stewart Mackenzie, Bart. (New edition, p. 80.)

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[*] History of British Birds, vol.iv. p. 161.

The genus *Rhynchæa* is closely allied to that genus which contains the snipe and woodcock; it chiefly differs from *Scolopax* in the mandibles being nearly equal and a little arched at the end, with the nasal grooves extending to the tip of the upper one. Like the snipes, the species of *Rhynchæa* have no webs to the toes of their feet; their plumage is more gaudy than that of the snipes and woodcocks, the quill-feathers of the wings and tail being particularly decorated with pretty ocellated spots.

The Painted Snipe (*Rhynchæa picta*, Gray) is, according to Jerdon*, a permanent resident in India; frequenting, like its allies in temperate regions, the most marshy spots, where its variegated brown and dusky yellow colours must help much to conceal it from view. On the grassy edges of tanks, marshes, and paddy-fields it may always be found; and there, with its long beak, so delicately supplied with nerves, it finds in the moist ground worms and grubs. Mr. Jerdon fancies that the greater number of this species breeds in the northern part of India, as it appears in considerable numbers at the commencement of the cold season.

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* Madras Journal, vol. xii. p. 206.

There is a closely allied species found in South Africa, while another has been described which is a native of Brazil; so that this genus, though containing very few species, is rather widely distributed.

On the banks of the Guiana rivers there is a bird named by the English Sun-bird, and by the Spaniards "Tirana." It approaches the heron tribe in outward appearance; but, according to Waterton ('Wanderings,' p. 285), does not live on fish. Its food consists of flies and other insects, which it seizes just as the heron does a fish or frog, by approaching close to them and then darting its beak at them so quickly that the prey has no time to escape. The plumage of the bird (*Eurypyga Helias*) is a most beautiful mixture of various colours,—grey, yellow, green, black, white, and chestnut, being combined in proportions exceedingly pleasing to the eye; the tail is very large and broad, while the neck is long and slender, and the legs are rather short. Its generic name is derived from the great size of the tail, a character not very common among the birds to which it is allied.

There is a small but interesting family of tropical birds belonging to this order, named by Mr. Gray PALAMEDEIDÆ, from its typical genus *Palamedea*. The chief characteristics of the birds composing it are,—the great length of the toes and the comparative shortness of the beak, which is more or less compressed at the sides, and curved downwards at the tip; the shoulder of the wing is armed with one or two stout spurs, which are of a horny texture, and are sharp-pointed. Their chief peculiarity, however, is the great length of the toes, as well as the elongation of the claws, which, from their expanse, enable the birds to walk with great readiness and rapidity over the leaves of the aquatic plants which float on the tropical rivers or marshes. The typical genus, *Palamedea,* contains but one species, the Horned Screamer (*P. cornuta*), so named from a long, slender, pointed horn on its forehead, and from the wild, screaming noise which it occasionally utters. The comparative anatomist can soon account for the cause of this, for on examining its trachea, he finds that it has an abrupt bony box, or enlargement, about the middle*; but the naturalist has not yet determined the use of the horn. On each wing there are two strong spurs, with which it is said to defend itself and its young from the attacks of the snakes, which abound in the watery places frequented by it. This bird feeds chiefly on the leaves and seeds of aquatic plants.

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* Blyth, edition of Cuvier's 'Animal Kingdom,' p. 248.

Of the tropical GRALLÆ few are more prettily plumaged than the species of *Parra,* called in India "Tank-runners," from being common birds in the vicinity of tanks, and from their running over the large leaves of the water-lilies and other plants which grow in such places. The toes in the birds of this genus are of great length, and so are the claws; the sole of their feet has therefore, like the great snow-shoe of the Esquimaux, a most extensive surface, over which the weight of the bird is diffused and easily supported.

Mr. Jerdon mentions two species as being very common in India; the *Parra Indica* and the *Hydrophasianus Sinensis,* or Golden-necked Tank-runner (Plate XVIII. fig. 2). These birds feed on seeds and vegetable matter, and are also fond of the shelled mollusca and water-bugs which abound in their favourite places of resort.

The *Parra gallinacea,* Temm., was found by Mr. Gilbert at Port Essington; and, in his notes furnished to Mr. Gould*, he records that its powers of diving and remaining under water are equal to those of any bird he ever met with. He found this curious species in four or five small families in different parts of a lake; they were usually occupied in feeding from the aquatic floating plants, over which the great length of their toes and claws enabled them to run with great facility. They were very shy, and did not fly well; when flying their long legs are thrown out horizontally to their full length. He found that the bird fed on aquatic insects and vegetable matter.

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* Birds of Australia.

The last family of the Grallatorial birds contains our often-heard Corncrake, and that shy bird called the Water-hen (*Gallinula chloropus*); it derives however its name, RALLIDÆ, from a genus of birds with a longer beak than either of these, the genus *Rallus*. All the birds of the family are distinguished by the body being compressed and flattened on the sides, a shape derived from the narrowness of the sternum; they are able, in consequence, to make their way with ease through the reeds and high grasses which they frequent; and most of them can also dive and swim with great ease, although their toes are not webbed. The beak is generally short and compressed, and frequently extends up on the forehead in the form of a bony shield; the tail is short, and almost concealed by the tail-coverts.

The most showy species of the family belong to the genus *Porphyrio*, which derives its name from the brilliant plumage of the birds composing it: their colours are generally fine shades of violet, blue, and azure; the beak is high in proportion to its length, and the shield on the forehead is of large size.

Professor Owen described a curious genus, from the cranium and other bones of a fossil bird, found by Mr. Mantell in New Zealand; he named it *Notornis Mantelli* (Plate XVIII. fig. 3), and, from its osteological characters, at once referred it to this family; and, from the form of its sternum, concluded that it must have been without the powers of flight. The natives had a tradition of a kind of water-rail, which once abounded in their islands, and which they called *Moho* or *Takahé;* but, according to their statements, the birds had been long ago exterminated. The Rev. Richard Taylor, of Waimate, who has long resided in New Zealand, and studied its natural history, alludes to it thus:—"*Moho,* Rail: colour, black; said to be a wingless bird as large as a fowl, with red beak and legs; it is nearly exterminated by the cats: its cry was *Keo! keo!*"

In 1849 Mr. Mantell obtained a recent specimen of this bird, which was captured by some sealers near Dusky Bay. These men perceived on the snow, with which the ground happened to be covered at the time, the footprints of a large bird; they followed the trail till they obtained a sight of the bird, which was pursued by their dogs, and captured after a long chase. The *Notornis* ran with great speed, and when taken screamed loudly, and made considerable resistance. The sealers took the specimen and kept it alive for three or four days, when they killed it and found the flesh to be delicious. Mr. Mantell secured the skin: the beak and legs were of a bright red. Dr. Mantell, in his communication to the Zoological Society (November, 1850), says that his son informed him that, according to the tradition, this rail formerly abounded in New Zealand, and formed a principal food of the natives. It was contemporaneous with the Moa. Dr. Mantell well observes that the discovery of a living specimen of this bird is "of the highest interest alike to the ornithologist and the palæontologist; for it was previously only known by its fossil remains, and would probably, like the Dodo of the Mauritius, have soon become wholly traditional." This unique specimen is now in the British Museum. The neck and body are of a dark purple colour, the back and wings being shot with green and gold; the tail is scanty and white beneath.

To the Rail family belongs the *Aramus scolopaceus*, called in Jamaica "Clucking hen, from its voice resembling that of a wandering hen." This bird seems to feed chiefly on snails and slugs, and occasionally also on snakes and lizards. Mr. Gosse* informs us that, at the approach of night, the *Aramus* utters piercing cries previous to roosting; it is a solitary and shy bird, and difficult to approach. About the end of the year it gets very plump, and its flesh is described as being of close and compact texture, peculiarly tender and very fine in flavour—"a compound of hare, partridge, and pigeon." Its general plumage is rather pretty, being of a brown colour; the feathers are marked through the centre with a pointed streak of pure white. The beak is slender, and somewhat swollen near the end, the mandibles not closing accurately. The bird was arranged by Cuvier between the cranes and herons; but modern naturalists, from its structure and habits, have shown that is with the rails it is more appropriately to be classed. Mr. Gosse describes some which he saw standing on the summit of some large bushes, densely covered by tangled creepers, which afforded a support for their broad feet. "They stood boldly erect, as if watching, their dark figures relieved against the sky, in an attitude exactly like that of an Ibis, though they flirted the tail in the manner of a rail. At brief intervals they uttered a short sharp sound, and sometimes a loud harsh scream. On being alarmed, they flew heavily and slowly, with the long legs hanging down, and the neck stretched forward, having a very awkward appearance in the air*." From this description the bird seems to have been, not altogether without some reason, referred to another family; and it is evidently one of those genera which connect, as it were, two allied families.

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* Birds of Jamaica, p. 361.

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* Birds of Jamaica, p. 358.

Order ANSERES. Web-footed Birds.

The order Anseres, so called from the Geese, which are highly characteristic members of it, contains all the web-footed birds: from the structure of their feet they are often called Palmipedes. The birds of this order are specially formed for swimming, while many of them are very expert divers, and most of the species are endowed with great power of wing. On land their gait is somewhat awkward, from the backward position of their legs, and their enclosed toes. With some isolated exceptions, their legs are short and compressed, and their toes are united together by a connecting membrane. The body in these birds is more or less depressed and boat-shaped, and the neck in many of the species is longer than the legs; so that some of them can with ease search for food below the surface of the water, while the body continues to swim. The sternum is very long, the better to protect their viscera, while their bodies are covered by a thick and close plumage, which is highly polished, especially on the under parts; and close to the skin there is a quantity of down, which protects them materially from the water, as well as supplies some of them with a soft material for their nests. In addition to the natural polish of the plumage, the feathers are lubricated with an oily secretion, so that water does not penetrate them.

The late Professor Macgillivray divided the swimming birds into four smaller orders, which he named and characterized from their different modes of taking their food. The Geese and Ducks he called *Cribratores,* or Sifters, from the food being sifted through the lamellated edges of the beak; his order *Urinatores,* or Divers, contained those birds which obtain the greater part of their food by diving, such as the Grebes, Divers, Auks, and Guillemots; his order *Mersatores,* or Plungers, contains the long-winged species which can keep up a sustained flight, like the Gannets, Gulls, and Terns; while the Jagers, or Skuas, the pirates of the aquatic order, are placed by him in a section which, from their habits, he calls *Spoliatores.*

We cannot refrain from quoting a passage from Mr. Hewitson's work, to the accuracy of which we were ourselves witnesses in 1851, when visiting the lofty cliffs of Noss. Some of the birds mentioned had disappeared, but from the myriads of sea-birds still on the rocks, there seemed as if there was no vacancy for other birds.

"To any one who can derive pleasure from observing the habits of birds, and seeing them in their own wild native haunts, one of their larger breeding-places must afford a pleasure which few things can give. I shall never forget the sensations of delight with which I have myself visited some of those in Shetland; the wild magnificence of the rocks, beautifully tinted here and there with many-coloured lichens, was alone sufficient to excite feelings of the most intense enjoyment, and far more so when peopled with tens of thousands of these interesting beings, covering their dark and barren sides, from the sea upwards to a thousand feet above its deep blue waves, each species occupying its own particular position; the kittiwakes first filling the ledges of the rock at a few feet from the surface of the water; the guillemots, the razor-bills, and the puffins next above them; and, high over all, the greater and lesser black-backed and herring gulls. The multitudes passing around you in their busy flight, in strong contrast to each other,—from the slow, majestic, eagle-like soar of the greater black-backed gull, to the rapid, short-winged, bustling flight of the puffin—the various mingled cries of the different species—the loud bark of the greater black-backed gull—the distinctly repeated cry, which has given its name to the kittiwake—

and occasionally, as something unusual seemed to pervade the dense rows of guillemots, a loud, hoarse murmur, like the cheering of some distant multitude, together with the constant motion of the freshening sea, and the loud beating of the surge against the rocks—all contributed to render this one of the finest scenes of nature*."

> "Who can recount what transmigrations there
> Are annual made? What nations come and go?
> And how the living clouds on clouds arise?
> Infinite wings! till all the plume-dark air
> And rude resounding shore are one wild cry."
> *Thomson*, '*Autumn*,' lines 867–872.

To this may be added the groups of stiff, black cormorants, perched on outstanding rocks, their footing made secure by barnacles. These black birds keep a sharp look-out, and every now and then fly off. The black tystie, with its white wing-covers (*Uria grylle*), may be seen floating about and occasionally diving. The visitor to Shetland cannot but be struck with the vast hosts of sea-birds everywhere engaged in seeking for their food.

In the Arctic regions, such as the shores of Baffin's Bay, Spitzbergen, and Nova Zembla, similar, if not richer, scenes may be witnessed. The Lombs' Bay, in Nova Zembla, derived its name from the number of these aquatic birds found there by its discoverer.

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* 'Coloured Illustrations of the Eggs of British Birds,' etc. By W. H. Hewitson. Vol. ii. pp. 400, 401.

In the Antarctic seas similar scenes may be witnessed, though the birds which form them belong to different species, and, in the case of the penguins, to different genera. The voyage of Captain Sir James Clark Ross contains many allusions to the lively effects produced, in otherwise dreary places, by the presence of sea-birds. The petrels, tropic birds, and albatrosses often lighten up the sea over which they skim, fly, or soar.

The lakes in the northern parts of the world are often covered in summer with the water-birds which migrate to them. Mr. Simpson, the North American explorer, tells us that the Canadian *voyageurs* call a very large lake which he visited "Lac aux Plumes," from the multitude of wildfowl which moult there every summer*; and every traveller and naturalist, in these remote regions, is struck with the immense abundance of the web-footed birds, which there, almost undisturbed by man or other animals, rear their young, and find, during the short but warm summer, abun-

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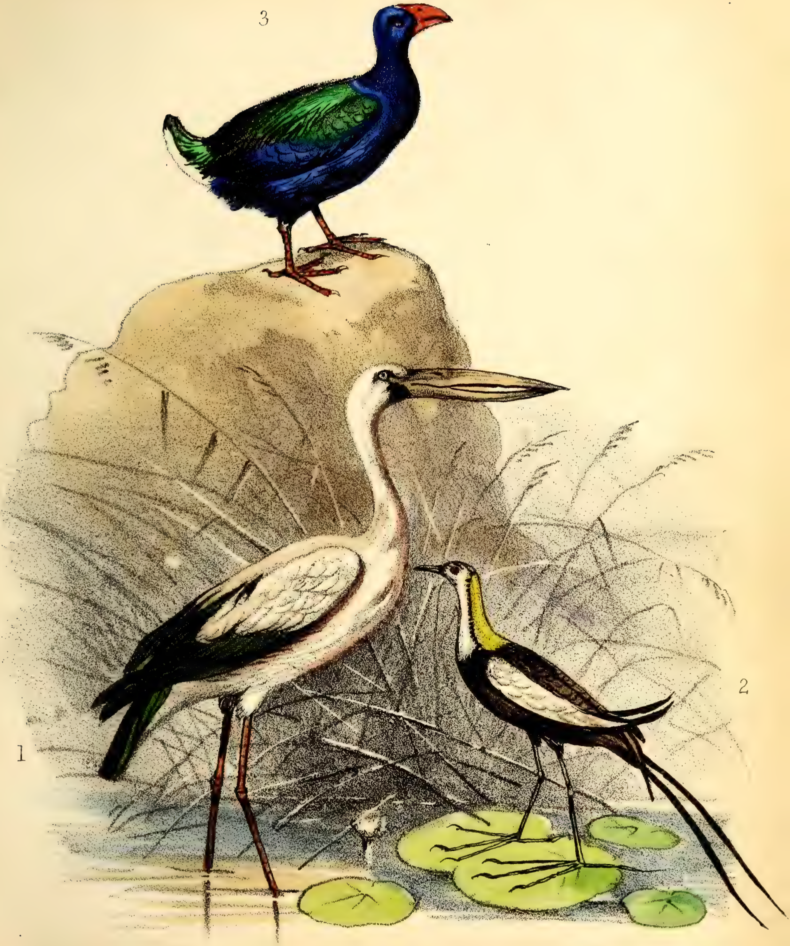
* 'Narrative of Discoveries on the North Coast of America, in 1836–39,' by Thomas Simpson, Esq., p. 42.



Bauerrichter & Cº lith.

1. Anastomus coromandelicus. 2. Hydrophasianus sinensis. 3. Notornis Mantellii.

dance of food. When the autumn frosts and the shortening days give tokens of coming winter, they stream to the south in great flocks, and pass the winter in a more genial climate.

The American poet Bryant, like Robert Burns, seems to have been struck with the flight and manners of the waterfowl, and the curious powers of wing which enable them to fly to such distances; and has thus beautifully addressed "A Waterfowl":—

"Whither, 'midst falling dew,
While glow the heavens with the last steps of day,
Far through their rosy depths dost thou pursue
Thy solitary way?

"Vainly the fowler's eye
Might mark thy distant flight to do thee wrong,
As, darkly painted on the crimson sky,
Thy figure floats along.

"Seek'st thou the plashy brink
Of weedy lake, or marge of river wide,
Or where the rocking billows rise and sink
On the chafed ocean side?

"There is a Power whose care
Teaches thy way along that pathless coast,—
The desert and illimitable air,—
Lone wandering, but not lost.

"All day thy wings have fann'd,
At that far height, the cold thin atmosphere,

Yet stoop not, weary, to the welcome land,
Though the dark night is near.

"And soon that toil shall end;
Soon shalt thou find a summer home, and rest
And scream among thy fellows; reeds shall bend,
Soon, o'er thy shelter'd nest.

"Thou'rt gone! the abyss of heaven
Hath swallowed up thy form; yet, on my heart,
Deeply hath sunk the lesson thou hast given,
And shalt not soon depart.

"He who, from zone to zone,
Guides through the boundless sky thy certain flight,
In the long way that I must tread alone,
Will lead my steps aright."—*William Cullen Bryant.*

On the islands and rocky coasts within the tropics, frequented much by sea-fowl, there are found great accumulations of their dung, somewhat altered and mixed with other matters: it forms a substance well known to the agriculturist as *guano*, and as forming his richest manure. A few years ago whole fleets of ships went to Ichaboe and other parts of the African coast, to procure supplies of this valuable article. Mr. Darwin* says that on the west coast of the intertropical parts of South America the beds are often several yards thick. When analysed it is found to be composed of the urates, phosphates, and oxalates of lime, ammonia, and potash, mixed with some fatty and earthy matter. Dead birds are often met with in it. In the arctic regions, where birds equally abound, the accumulations from their droppings are not met with; Dr. Sutherland* accounts for the disappearance of the guano-beds from the dung being "washed away by rains or melting snow, or it may be owing to vegetation, by which it becomes dissipated into the atmosphere, or converted into a thin coating of brown mould on the rock, in which grasses and other plants take root and flourish luxuriantly, affording shelter to myriads of flies and their enemies, the spiders, even on and beyond the 74th degree of north latitude."

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* Journal, p. 9.

The family ANATIDÆ contains the whole of the Ducks, Geese, and Swans, birds distinguished by their thick broad bill, which is high at the base, and is covered by a soft sensitive skin, the tip alone being covered with a horny nail-like appendage. The edges of the beak are cut into a number of thin laminæ, or small teeth; and from these plates the family is often called *Lamellirostres*. The tongue is large and fleshy, with a toothed border. This beak, by the laminated structure of the edge, is admirably suited for birds whose habit, as Derham* calls it, is "to quaffer and hunt in water and mud" for the numerous small and soft substances which constitute the food of most of them. During this process, in many cases mud and other extraneous substances are collected, which, by the laminæ, are separated from the edible matter, and strained off by the side.

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* Journal of Voyage to Baffin's Bay, etc. vol. i. p. 168.

The wings are of moderate length: the trachea in the male is generally dilated, near the point of its division, into a bony chamber of various form, and some of the species have this tube prolonged and bent back in winding folds within the swollen keel of the sternum. The form of the bony chamber, and the extent and bending of the tube, vary in the different species, and must have a considerable connection with the intonation of the voice. The gizzard is large and muscular. Most of the species nestle on the ground, and lay numerous spotless eggs: the young as soon as hatched follow their parent, and are able to swim. It is only in the first group (*Phœnicopterinæ*), containing the Flamingoes, that the legs are of great length; in the greater number they are rather short, and from their backward position and their webs, the birds when walking have an awkward waddling gait. In the second group (*Plectro-*

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* Physico-Theology, p. 193.

pterinæ), which contains the Spur-winged Goose of Western Africa, the legs are much longer than in the other geese, ducks, and swans; and the shoulder of the wing is armed with two strong spines, from which the bird derives its name (*Plectropterus*). The Mergansers (*Merginæ*) also belong to this family, and contain species which have a longer and more cylindrical beak than the others, and the sides of the beak are armed on each side with small pointed teeth, directed backwards, instead of lamellæ; in fact, these saw-like teeth are a mere modification of the plates which are so characteristic of the family. The birds of this very extensive family are widely distributed, and many of them, especially such as live chiefly on insects and vegetable substances, furnish us with excellent food; while several of them are of great use to mankind from the down and feathers with which they supply him.

Flamingoes (*Phœnicopterus*) have very long legs, with the three front toes webbed; the neck is of very great length and terminates in a small head, which has a large and singularly-bent bill; the tongue is thick and fleshy; dishes of them used in Roman times to be served up at the feasts of gourmands; the edges of the bill are furnished with fine laminæ, as in the ducks, and serve the same purpose in separating their food from the water and mud in which they find it.

Mr. Darwin found that flamingoes through South America were much attached to salt lakes; he saw many of them in the salinas near the mouth of the Rio Negro, wading about in search of their food, which consists probably of the worms which burrow in the mud*. He adds, that the workmen sometimes find their bodies preserved in the salt. Mr. Hill† describes the flamingoes as being very common in Cuba, in marshes, and lagoons, and salina-ponds, where they move about in flocks, or may be seen feeding in ranks of two and three hundred together, while one of their number, standing erect, keeps a look-out to warn his comrades of the approach of danger. "Their lengthened lines and red plumage have led the colonial Spaniards to call them *English Soldiers*,—a name not inappropriate to birds that marshal themselves under a leader, and regulate their movements by signals, when the remotest danger threatens; and obey the bugle-blast of their sentinel, when he summons the cohorts to the wing and to betake themselves to other feeding-grounds." Mr. Hill describes the flamingoes as constantly trampling with their feet when they feed, while they ply their long lithe necks, scooping their food with their heads reversed and bent towards their feet. "The bill being crooked and flattened for accommodation to this reversed mode of feeding, when the head is thrust down into the mud-shoals and the sand-drifts the upper mandible alone touches the ground." Mr. Hill refers to the minute and interesting description of the tongue given by Professor Owen. He says:—"The spines with which the upper surface is armed, are arranged in an irregular and alternate series, and act with the notches on the edge of the upper mandible, on which they press when the bird feeds with the head reversed. In this reversed position, the weight and size of the tongue become a very efficient instrument for entrapping the food*." Dampier describes the nest as being formed of earth, in marshy places; and says that the birds, when hatching their eggs, place themselves astride on the nest, their long legs not allowing them to sit in the usual manner†.

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* Journal, p. 77.

† In Gosse's 'Birds of Jamaica,' p. 391.

Mr. Gardner, in his 'Travels in Brazil' (p. 552), says that the muddy shores at Alcantara are frequented by great flocks of the *Phœnicopterus Chilensis*. These birds roost among the mangroves, and are sought after by the inhabitants, who esteem their flesh excellent food. Dampier says:—

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[*] Gosse's 'Birds of Jamaica,' p. 393.

[†] New Voyage, p. 71.

"The flesh of both young and old is lean and black, yet very good meat, tasting neither fishy nor any way unsavoury. Their tongues are large, having a large knob of fat at the root, which is an excellent bit*."

The Swans are at once known by their long necks and graceful form in the water; though, when on land, their shuffling walk and the constrained position of the neck and wings give them a very awkward appearance when walking. The usual colour of swans, and there are several species, is white: that white is their colour has passed into a proverb. In Chili, however, there is a species with a black neck (*Cygnus nigricollis*), which has been for some time a much-admired denizen of the Zoological Gardens. In Australia, that country of contraries, a river and a settlement take their name from swans, of a uniform black colour, excepting on the beak, which is bright red with a white band, forming a pretty contrast. Our early voyagers were not a little surprised at finding commonly in Australia what the Roman poet, in speaking of European lands, alludes to as "rara avis in terris."

Every child now, thanks to zoological gardens, is familiar with the Black Swan of Australia (*Cygnus atratus*). Its

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[*] New Voyage round the World, p. 71.

sooty cygnets, attended by the negro parents, may be generally seen during the summer months on ponds in our gardens and public places of resort; and though the first short sentence of Horace Walpole is not exactly suitable to one of this species, the others are:—"The colouring of the swan is pure; his attitudes are graceful; he never displeases you when sailing on his proper element. His feet are ugly; his walk not natural. . . . Still the impression a swan leaves is that of grace."

The swans in Iceland, during the breeding season, retire in pairs to the small lakes, where they conceal themselves among reeds; and, according to Sir George Mackenzie, many are thus protected from the attacks of the people, who receive the value of a few shillings for their skins from the Danish merchants.

Captain Lyon[*] describes the nest of a swan which he saw in Winter Island, in the Arctic regions, in the spring of 1822. This nest was a large oval mound of peat, made up of small pieces not exceeding a walnut in bigness; and as the country around was at the time almost entirely covered with snow, the materials must have been fetched from a considerable distance, and must have occasioned great labour on the part of the constructors. The nest was of enormous dimensions, being five feet ten inches by four feet ten inches, and its height was two feet. The eggs weighed eight ounces each.

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[*] Private Journal, p. 205.

Among the geese somewhat allied to those found wild in this country, we may mention the Snow Goose (*Chen hyperborea*),—a species particularly abundant during summer in the Arctic parts of North America, and found, but more sparingly, in Lapland and Russia. It gets its English name from the general colour of the plumage being snow-white in its adult state, with black quill-feathers. Wilson* remarks that it visits the Delaware River on its return from the north early in November, and that they feed on the roots of the reeds, tearing them up from the marshes like hogs. The singular structure of its bill enables it to graze on coarser and stronger plants than our geese. Wilson describes the edges of it as having each twenty-three indentations on each side; the inside of the upper mandible has also seven lateral rows of strong projecting teeth; and the tongue, which is horny at the extremity, is armed on each side with thirteen long, sharp, bony teeth, placed like those of a saw, with their points directed backwards. The Blue-winged Goose has been regarded as the young of the snow-goose in one of its stages towards maturity; but Mr. Rae, the Arctic explorer*, who resided many years on the shores of Hudson's Bay, believes it to be a distinct species. He remarks that the young do not separate from the old, as has been asserted; and that "families may be seen feeding by themselves all over the marshes, the old bird keeping a sharp look-out, and giving timely warning to her brood of any approaching danger." He adds that the Indian, "who has thoroughly studied the habits of the bird, takes advantage of her affection for her young, and of their attachment to their parent, to make both his prey. Well knowing that the young are easily decoyed by imitating their call, and by mock geese set up in the marsh, and that the old bird, although more shy, will follow them, he waits patiently until she comes within range; if he shoots her he is pretty sure to kill the greater part of the others, as they continue to fly over and around the place for some time after."

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* American Ornithology, vol. iii. p. 171.

Sir John Richardson describes the flesh of this species as being far superior to that of the Canada Goose (Plate XIX. fig. 1); and in the Arctic parts of North America, these two species are killed in thousands and barrelled up for use.

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* Narrative of Expedition to Shores of Arctic Sea in 1846 and 1847, p. 69.

This and the Canada Goose are two of the species whose arrival in the fur countries marks the return of spring; they are then very lean, and in their course northwards have definite resting-places, so that in a short time they become very fat; their movements southwards indicate the approach of winter. Longfellow, in his 'Evangeline,' alludes to them:

> "Birds of passage sail'd through the leaden air from the ice-bound,
> Desolate northern bays, to the shores of the tropical islands."

Wilson* has well described the flight of the Canada geese as being "heavy and laborious, generally in a straight line, or in two lines approximating to a point, thus >; in both cases the van is led by an old gander, who every now and then pipes his well-known *honk*, as if to ask how they come on, and the *honk* of "all's well" is generally returned by some of the party. Their course is in a straight line, with the exception of the undulations of their flight; when bewildered in foggy weather, they appear sometimes to be in great distress, flying about in an irregular manner, and for a considerable time over the same quarter, making a great clamour." This species is easily domesticated; and, from its fine black neck and white cheeks, forms a conspi-

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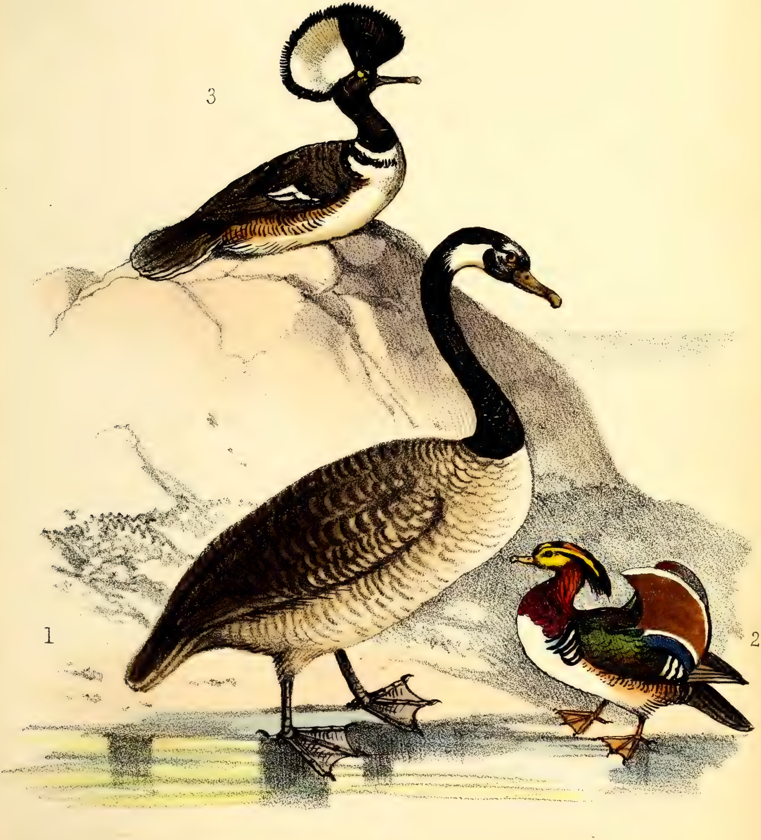
* American Ornithology, vol. iii. p. 178.



Banerrichter & C° lith.

1. Cygnopsis canadensis. 2. Aix galericulata. 3. Mergus cucullatus.

cuous member of the poultry yard. Mr. Waterton, in the second series of his 'Essays on Natural History*,' gives a laughable account of the breeding of a Bernacle gander with a Canada goose at Walton Hall. He says:—"Nothing could exceed the assiduity with which the little Bernacle stood guard, often on one leg, over his bulky partner, day after day, as she was performing her tedious task. If anybody approached the place his cackling was incessant; he would run at him with the fury of a turkey-cock; he would jump up at his knees, and not desist in his aggressions until the intruder had retired. There was something so remarkably disproportionate betwixt this goose and gander, that I gave to this the name of Mopsus, and to that the name of Nisa; and I would sometimes ask the splendid Canadian Nisa, as she sat on her eggs, how she could possibly have lost her heart to so diminutive a little fellow as Bernacle Mopsus, when she had so many of her own comely species present from which to choose a happy and efficient partner." The goslings partook of the plumage of both species, and were intermediate in size.

One of the largest and most curious of the marine ducks is a species met with among the Falkland Islands, and in other parts of the ocean about Cape Horn. In the voyages of Byron, Cook, and other navigators, it is often mentioned under the singular appellation of "The Race-horse,"—a name given to it from its swiftness in moving over the surface of the water. Captain King, who described its habits in the 'Zoological Journal*,' says that it would be no exaggeration to state its speed at from twelve to fifteen miles an hour. Modern sailors call this bird now "The Steamer," the alternate and paddling motion of its wings somewhat resembling these inventions of modern ship-building. Its wings are very short, too short indeed to allow it to fly, and only serving to "propel it *along* rather than *through* the water." Its broad webbed feet aid it also much in its motion, which is described by Mr. Darwin† as being "something like that by which the common house-duck escapes when pursued by a dog." Captain King describes them as being used like the paddles of a steam-vessel; and Mr. Darwin also says, "I am nearly sure that the 'steamer' moves its wings alternately, instead of both together, as in other birds." From the shortness of its wings and the small stiff feathers with which they are covered, and from the power which, King says, the bird has of staying a considerable time under the water, it has some distant resemblance to the penguins, inhabitants of the same rough ocean. Mr. Darwin says that it "feeds entirely on shellfish from the kelp and tidal rocks; hence the beak and head, for the purpose of breaking them, are surprisingly heavy and strong. So strong is the head, that I have been scarcely able to fracture it with my geological hammer; and all our sportsmen soon discovered how tenacious these birds were of life. When pluming themselves in the evening in a flock, they make the same odd mixture of sounds which bull-frogs do within the tropics*." It is a bird of large size, sometimes weighing twenty-two pounds. Captain King described it under the name of *Oidemia Patachonica;* Messrs. Quoy and Gaimard placed it in a genus (*Micropterus*) which they formed for its reception. It is the *Micropterus cinereus* of Mr. G. Gray, who places it in his subfamily *Fuligulinæ,* close to the Scoters (*Oidemia*), with which it agrees in many particulars, especially in the lobated hind-toe and the backward position of its legs,—peculiarities of all the ducks which seek their food on the sea.

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* P. 114.

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* Vol. iv. p. 100.

† Journal of Researches, p. 257.

No one unacquainted with the Arctic regions and the exuberance of animal life at certain seasons in those remote and *secure* seas, and the rocky coasts and swampy plains near them, can form any idea of the multitude of aquatic birds at times to be found there. Captain F. W. Beechey*, in 1818, found the King Eider Duck (*Somateria spectabilis*) so numerous on an islet close to Spitzbergen, that it was scarcely possible to walk without stepping on their nests. His party could have obtained several sacks of the down, had they been disposed to rob the nests. That able officer and accurate observer remarked a provision which the God of Nature has made against some of the casualties to which the young are exposed, in their embryo state, by the parents being kept away from their nests, in so cold a climate. He remarked that the parents, when immediate danger forced them to fly, hastily drew the down of the nest over the eggs and glued it with a yellow fluid, which they deposited as they arose. In this way not only was the cold air kept from the eggs, but the arctic foxes, always ready to take advantage of the parent ducks' absence, will not touch the eggs tainted by this, to them, very offensive secretion. Captain Beechey observed that if very suddenly surprised the eider ducks flew off only a little way, and returned to effect this covering, after which they flew off apparently without much solicitude. The males, as well as females, pluck this down from their breasts, and the former prove assiduous attendants on the females when sitting, and are occasionally seen to sit on the eggs to keep them warm during the absence of the mother to procure food. The down is so tenacious that it adheres with great readiness to any rough substance, and in this way the nests are effectually prevented from being blown away or overturned by winds.

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* Journal, p. 258.

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* Voyage of Discovery towards the North Pole, in H.M.SS. Dorothea and Trent, in 1818, pp. 101–103. (London, 1843.)

The males leave at the close of the summer; and, when the winter commences, the females and young, some of which are still quite weak on the wing, may be met with, according to Captain Beechey, in immense flocks, a hundred miles or more from land. He believes that they winter in Norway, and occasionally a stray bird comes into our latitude, much to the joy of the collector of British birds, when he secures it for his collection.

Many are the enemies of the eider ducks in the Arctic regions, although one of these enemies has a certain amount of consideration not shown by the others. The Esquimaux who inhabit the coast of Baffin's Bay remove the eggs before the birds begin to sit on them, until they have collected enough, when the females lay more, which they are allowed to hatch*. They find however, as Dr. Sutherland informs us, greater enemies in the arctic bear, arctic fox, and burgomaster gull. The bear swims from island to island, and plunders their nests without mercy, but as he soon leaves the island, the birds, if not too late in the season, resume their nurseries; the arctic fox is frequently carried on drifting ice to one of these duck-visited islands, from which he cannot escape till late in the season; the burgomaster very often pounces down on the eggs when they are left uncovered, and devours them.

From the nests of two or three eider ducks (*Somateria mollissima*) Mr. Selby says he has frequently procured as much down as would fill a moderate-sized pillow; and yet this quantity, when compressed, is not above two handfuls, and does not weigh more than an ounce! In the northern countries this down is a valuable article of commerce; and the female, when her nest is robbed of it, continues to pluck a fresh supply from her breast as long as any remains on it.

On a small island in Baffin's Bay, visited in July, 1850, by some of Captain Penny's party, the ground was found to be literally covered with the eggs of the eider ducks. Dr. Sutherland, in his 'Journal' (vol. i. p. 167), says that it was impossible to walk among the nests without trampling upon the eggs, and each nest contained from four to seven or eight eggs. A boat was loaded in the course of two hours, and, on its return to the ship, the eggs were counted. Although he calculates that only a twentieth or thirtieth part was brought away, the number of eggs brought off was about five thousand: they were not however all sound.

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* Dr. Sutherland: 'Journal of a Voyage in Baffin's Bay and Barrow's Straits, in 1850, 1851,' p. 137.

To the Duck tribe, and one too of the rarest quality and reputation, belongs the celebrated Canvas-back Duck of North America (*Nyroca Valisneria*). This bird, of so much repute among gourmands, breeds, luckily for itself, in the fur countries, far from man; and when it comes south, meets with but "a warm" and rough reception. It derives its name from the aquatic plant (the curious *Valisneria*) on which by choice it feeds. Mr. Peabody* informs us, in his 'Birds of Massachusetts,' that it is on the white roots of this narrow long-leaved plant that it feeds. The birds "feed about the shoals where it grows, diving and tearing it up, not discouraged in consequence of the losses which they suffer from the dishonest arts of the widgeon." This author informs us that the ducks, when they come south, are lean, but set diligently about procuring food and soon get fat. In this state, poor things! they unknowingly become attractive morsels, and are eagerly sought after. They are very watchful at night, even keeping sentinels to watch. Mr. Peabody hints that the canvas-backed ducks could be easily domesticated, as they eat grain very willingly: as it is, the red-headed pochard (*Nyroca ferina*), a bird found with us, and which in America eats the *Valisneria,* "has the honour" of being substituted for it, and is often sold in the market for a similar price. It is doubtless as good too, so that gourmands who *must* have canvas-backed duck, and *cannot* get it, *may* occasionally procure in our market its representative. We have figured the male Mandarin Duck of China (Plate XIX. fig. 2), one of the most handsome of the family.

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* Boston Journal of Natural History, vol. iii. p. 249.

The birds constituting the next family are even more at home in water than the *Anatidæ*. They are all of them able divers, and can remain for a considerable time beneath the surface; from the typical genus being *Colymbus,* the family has derived its name of COLYMBIDÆ, or the Divers. The divers have a smooth, compressed, pointed bill, with linear nostrils; the head is small compared with that of the ducks; and the wings are generally rather short and not well adapted for flight, but are used like fins to enable them to swim under the water. The body is clothed with a particularly compact plumage; the legs are placed very far behind,—a position which aids the birds much in swimming, but renders them particularly bad walkers. These legs are flattened so as to present a sharpish edge before and behind, which gives them the action of an oar. The family is a limited one in species, but they are widely distributed. The Loons, or Divers (*Colymbus*), are longer winged than the others, and have the feet webbed as in the ducks; their tail is short, and when standing they rest upon it and the feet. The species are exclusively marine, and destroy great quantities of fish; they lay two or three large spotted eggs. In the Grebes (*Podiceps*) the toes are separated nearly to the base and they are margined with a wide membrane; they have no vestige of a tail; unlike the loons, they frequent fresh-water lakes, and form their nests among the reeds, raising them on a superstructure above water-mark; they lay several eggs. The birds of the tribe *Heliornincæ* have the feet lobed as in the grebes, but the tail is considerably developed, and the claws are sharper.

The family ALCIDÆ is distinguished from the last family by the birds composing it being destitute of a hind toe; in some of the genera the beak is much compressed, in others it is straight and pointed; their legs are short, and the feet very small. When the birds are under water, these organs are not used in progression, but are stretched out behind them; the wings alone aid them in their progress under the water. The members of this family lay but one egg, which is of large size; they are all oceanic birds, and some of the species are found further north and further south than any other birds. Many birds of this family are quite unable to fly, their short wings being only used as fins. The feathers of many of them are much sought after, and their eggs are objects of considerable value, being of an excellent flavour.

To the group *Alcinæ* belong the curious-billed Puffin, aptly called Coulter-kneb from its sharp share-like beak (*Fratercula arctica*), and the Razor-bill and other auks with longer beaks, shaped like the blade of a knife. In the group *Phaleridinæ* the bill is less elevated: this group derives its name from its typical genus *Phaleris*, which contains the crested auk, a species from the north-west coast of America. There are some species of birds belonging to this group, and classed in a peculiar genus named *Pygoscelis*, which are found in the Antarctic seas. In their habits these birds do not seem to differ much from the puffins and auks. We now come to the true Penguins (*Spheniscina*), which have received the name from the Cape Penguin (*Spheniscus demersus*).

The Penguins are most comical-looking birds, having plumeless appendages in place of wings, covered with small scale-like feathers; their legs are thick, and placed so far back that, when the birds rest on their toes, the bodies are nearly upright. They have a small hind toe directed inwards, and their three front toes are connected by an entire membrane. Unlike the aquatic birds of the northern regions, which can fly from the water direct to the rocky ridges, often parallel with the surface of the sea, where their eggs or young are placed, the penguins of the southern seas require to select rocks or ledges of rocks sloping towards the sea, up which they have to trail.

Mr. M'Cormick, surgeon of H.M.S. Erebus, describes the penguins of Possession Island as being in such countless multitudes, that it was with difficulty his party succeeded in making their way through them. The penguins were at the time (January, 1841) busily engaged rearing their young, and their clamour baffled description: the young birds were covered with down. Sir James Clarke Ross thus describes Possession Island:—"We saw not the smallest appearance of vegetation, but inconceivable myriads of penguins completely and densely covered the whole surface of the island, along the ledges of the precipices, and even to the summits of the hills, attacking us vigorously as we waded through their ranks, and pecking at us with their sharp beaks disputing possession; which, together with their loud coarse notes, and the insupportable stench from the deep bed of guano, which had been forming for ages, and which may at some period be valuable to the agriculturists of our Australasian colonies, made us glad to get away again[*]."

The fearlessness of the penguins is a feature of their character, partly from natural stupidity and partly from the remote seas they inhabit being seldom visited. Sir James Clarke Ross speaks of them as following the ships and "answering the call of the sailors, who imitated their cry; and although they could not scramble over the ice so fast as our ships sailed past it, they made up for it when they got into the water, and we soon had quite a flock of them in our wake, playing about our vessel like so many porpoises[†]."

The Great Penguin (*Aptenodytes Forsteri*, G. R. Gray),

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[*] A Voyage of Discovery and Research in the Southern and Antarctic Oceans, 1839–43, vol. i. p. 189.

[†] *L. c.* p. 179.

Plate XX. fig. 3, was first discovered during one of Captain Cook's voyages. Captain Sir James Clarke Ross thus alludes to it in the 'Narrative of the Voyage of H.M.SS. Erebus and Terror'* (January 11, 1842):—"During the last few days we saw many of the great penguins, and several of them were caught and brought on board alive; indeed it was a very difficult matter to kill them, and a most cruel operation, until we resorted to hydrocyanic acid, of which a tablespoonful effectually accomplished the purpose in less than a minute. These enormous birds varied in weight from sixty to seventy-five pounds. The largest was killed by the Terror's people, and weighed seventy-eight pounds. They are remarkably stupid, and allow you to approach them so near as to strike them on the head with a bludgeon; and sometimes, if knocked off the ice into the water, they will almost immediately leap upon it again as if to attack you, but without the smallest means either of offence or defence. . . . Its principal food consists of various species of cancri and other crustaceous animals; and in its stomach we frequently found from two to ten pounds' weight of pebbles, consisting of granite, quartz, and trappean rocks." Mr. M'Cormick says that, as he had no opportunity of landing on "Louis Philippe Land," for specimens of the rocks, he found the stomachs of the penguins contribute much information; he speaks of the birds as being his "best geological collectors," from their crops being frequently filled with pebbles.

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* Vol. ii. pp. 158, 159.

Sir James Ross refers to the great amusement afforded to the sailors by the capture of the great penguin; "for, when alarmed and endeavouring to escape, it makes its way over deep snow faster than they could follow it: by lying down on its belly and impelling itself by its powerful feet, it slides along upon the surface of the snow at a great pace, steadying itself by extending its fin-like wings, which alternately touch the ground on the side opposite to the propelling leg."

Mr. Gould found the Little Penguin (*Eudyptes minor*), abundant in Bass's Straits and on the south coast of Australia, where the depth of the water was not too great to prevent its diving to the bottom. He remarks that, from the great weight of the body and the density of the plumage, this bird swims very deep in the water,—the head, neck, and upper part of the back only being above the water. In the sea its powers of progression struck Mr. Gould with astonishment, as it bounded through the deep like a porpoise, using its short fin-like wings, as well as its feet, to assist it in its progress. He found that this species, during the severest gale, could descend to the bottom; where, among beds of corallines and forests of seaweed, it paddled about in search of crustacea and small fish, eating at the same time the fuci which grew there. The paths and avenues leading to the holes, or depressions, in which they deposit their eggs are very singular, intersecting each other, and the birds carefully remove every stick and stone which may be in the way. The young, as in all the penguins, are like little muff-bags of down, the soft plumage being singularly in contrast with the stiff scale-like feathers of the adult.

Mr. Darwin, in his 'Journal,' gives some very interesting notes on the habits of a penguin common among the Falkland Islands, and which seems to be the Red-footed Penguin (*Eudyptes demersus*). "One day, having placed myself between a penguin and the water, I was much amused at watching its habits. It was a brave bird; and, till reaching the sea, it regularly fought and drove me backwards. Nothing less than heavy blows would have stopped him; every inch gained he firmly kept, standing close before me, erect and determined. When thus opposed, he continually rolled his head from side to side, in a very odd manner, as if the power of distinct vision only lay in the anterior and basal part of each eye. This bird is commonly called the Jackass Penguin, from its habit, while on shore, of throwing its head backwards, and making a loud strange noise, very like the braying of that animal; but, while at sea and undisturbed, its note is very deep and solemn, and is often heard in the night-time. In diving, its little plumeless wings are used as fins; but on the land, as front legs. When crawling (it may be said, on four legs) through the tussocks, or on the side of a grassy cliff, it moved so very quickly that it might readily have been mistaken for a quadruped. When at sea and fishing, it comes to the surface for the purpose of breathing, with such a spring, and dives again so instantaneously, that I defy any one at first sight to be sure that it is not a fish leaping for sport."

In the last group of the Auk family (*Urinæ*) the bill is covered with feathers as far as the nostrils, and is notched in most of the species at the tip; the hind toe is wanting. The name of the group is derived from the typical genus *Uria*, which contains the Guillemots. Mr. Hewitson* de-

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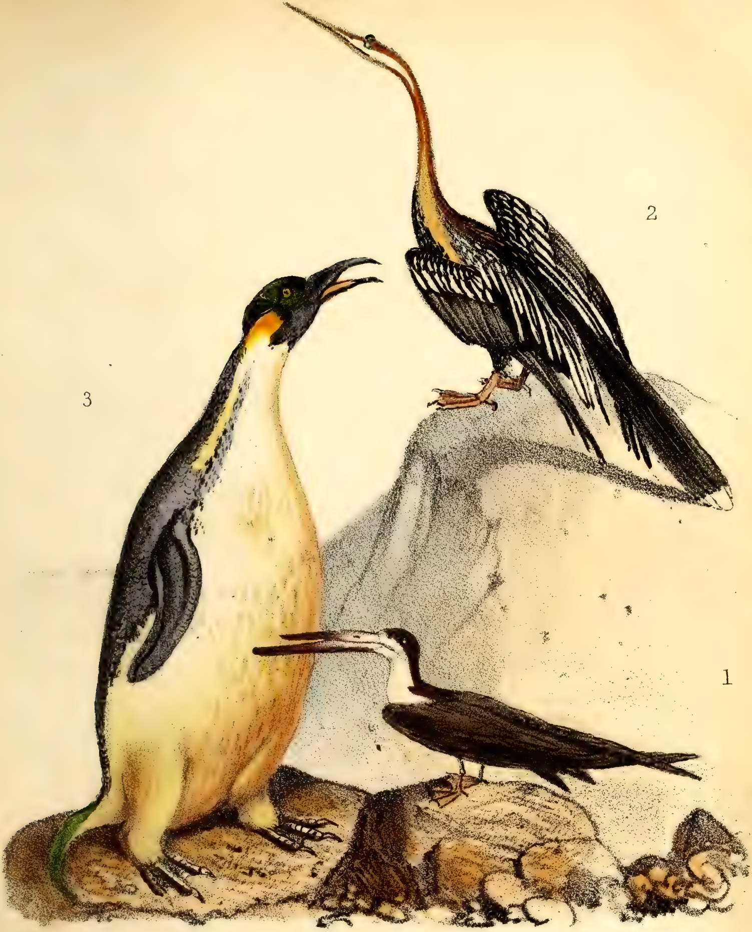
* Eggs of British Birds, vol. ii. p. 400.



Bauerrichter & C° lith.

1. Rhynchops nigra. 2. Plotus melanogaster. 3. Aptenodytes Forsteri.

scribes the egg of the common Guillemot (*Uria Troile*), and says it has often been a matter of surprise to him that its eggs are not swept altogether into the sea by the severe gales of wind; as it is, many of their eggs are precipitated into the sea when the parent birds fly too hastily away. He adds, were the eggs of the guillemot, which are very narrow at one end, "shaped like those of the majority of birds, nothing could save them: their form, which is peculiar to themselves amongst the eggs of the sea-fowl, is their only protection; it gives them greater steadiness when at rest, and where they have room to roll, the larger end moving round the smaller in a circle, keeps them in their original position: when placed upon the centre of a table and set in motion they will not wander far." We may remark that the egg of the guillemot is very large compared with the size of the bird; and it is to be noted of northern animals generally frequenting the sea, that the young are very big, and soon attain the size of their parents.

Mr. Rae, in his 'Narrative of an Expedition to the Shores of the Arctic Sea in 1846 and 1847,' mentions in a note*, the great attachment which the foolish guillemot manifests to its young. He tells us that in the Orkney

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* P. 24.

Islands, where they breed in great numbers, he has chased the young ones, when they become so fatigued as to be easily caught. "When one of them is taken into the boat the parent bird approaches within a few feet, dives under and around the boat in all directions, and whenever it comes up to the surface utters a peculiarly melancholy note, at the same time turning its head in a listening attitude, as if expecting to hear an answer from the prisoner. The anxiety of the mother has always the desired effect; and it is pleasing to observe the joy with which she swims away with her recovered young one, nestling it under her wing, and never permitting it to stray a foot from her."

The whaler and the Arctic voyager are often amused by the lively gambols of a small bird (a member of this group), quite at home in the northern seas. It is called the Rotche, Rotge, or Little Auk (*Arctica alle*). Sir Edward Parry, in north latitude 82¾°, when trying to reach the North Pole by the ice to the north of Spitzbergen, on the 24th July, 1827, records, "The only notice of animal life occurring in our journals, in the course of this day's travelling, consists in our having *heard* a rotge*." In the same seas, in August, he met with large flocks of these birds feeding on the *Argonauta arctica,* which swarmed in myriads*. Dr. Sutherland, when with Captain Penny in 1850, searching for Sir John Franklin, often alludes to this pretty little arctic bird, which he and his party sometimes found in myriads in Baffin's Bay. In the beginning of August, 1850, when in Melville Bay, he says that "immense flocks of rotges were continually seen, flying north or south according to the direction of the wind. They generally fly against the wind, where they are sure to find open water. Their flight is invariably high over a tract of ice presenting no lanes or pools of water to receive them. In consequence of the closeness of the ice around the ships, our sport among them was not very extensive. Captain Stewart, on one occasion, travelled a few miles to a large angular opening, where they were very abundant, and succeeded in shooting a great number: he brought down twenty to thirty at every shot. The rotge is excellent eating, and is highly prized by every taste. I have heard the eider duck, and the long-tailed duck, and even the loon, denounced by persons whose tastes were really fastidious, but I never heard a word against the little auk. Its flesh, and that of sea-fowl generally in the Arctic regions, improves very much by keeping for a few weeks after being shot; indeed it is not uncommon to use them after they have been three months hanging to the booms around the ship's quarter*." This interesting little bird is about the size of a pigeon, and is indeed often called by the sailors "Greenland Dove;" and it has been named also *melaleucos*, from its colour, being black above and white below. The bill is rather short, and is without notch at the end; at the base, as in the guillemots, it is closely muffled up with feathers. On August 17, 1850, Dr. Sutherland remarks, in his 'Journal' (vol. i. p. 262), that the rotches at that season had the head and upper part of the gullet, or floor of the mouth, apparently much enlarged, and quite out of proportion to so small a bird. He says that, "as the breeding season advances, the skin and thin muscular layer beneath and on both sides of the tongue are distended into something in the form of a pouch, which will be found crammed full of their ordinary food (*Gammarus arcticus* and other allied crustacea), which they bear off to their young. I have chased them with a boat, frightened, and shot them, without succeeding in making them disgorge the precious contents of these wonderfully capacious pouches." The Doctor thinks that this enlargement may somewhat resemble the pouch of the pelican.

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* Narrative, etc., p. 101.

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* Narrative, etc., p. 119.

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* Journal of a Voyage in Baffin's Bay and Barrow's Straits, in 1850, 1851, vol. i. p. 220.

The birds of the next two families have very long wings, and are capable in consequence of protracted flight. Many of them are found on the ocean at great distances from the land. To this section Cuvier has applied the name of LONGIPENNES, from the long wings, which are so characteristic of the group.

The family PROCELLARIDÆ contains the Petrels and Albatrosses,—birds which have longish beaks, hooked at the tip, and the extremity looking as if a piece had been articulated to it; the nostrils are tubular, sometimes united and opening by a common orifice, or separated, and opening by two distinct holes; the hind toe is either reduced to a claw, or, as in the albatross, is absent. The species are much more numerous than was at one time supposed, and they are dispersed widely. Mr. Macgillivray indeed believes that some of the species make the circuit of the globe, as he has met with at least five of the family which are common to the South Indian and the South Pacific Oceans*. He says that he has almost invariably found in the stomachs of the many albatrosses, petrels, and shearwaters which he has examined, the undigested horny mandibles of cuttlefish, so that these creatures form apparently their principal food; and as the petrel family are to a certain extent nocturnal, he infers that the small cuttlefish on which they feed approach the surface only at night.

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* Voyage of H.M.S. Rattlesnake, vol. ii. p. 96.

What voyager on the pathless sea has not noticed the little companionable "Mother Carey's Chicken," often ominous of storms to the sailor, and so well alluded to by Charles Waterton, in his second voyage towards his pleasant wanderings in South America (p. 85)? "It must have been hatched in Æolus's cave, amongst a clutch of squalls and tempests; for, whenever they get out upon the ocean, it always contrives to be of the party." *Procellaria* used to be its name, a word *sounding* of storms. Modern naturalists have restricted this appellation to larger birds, and have given it and its congeners the much more happy name of Sea-skimmer, for so may be translated "*Thalassidroma.*" The English name of Stormy Petrel, in its second part, reminds us of the Apostle who afterwards served his Lord so faithfully, and who once *would* walk on the waves of Gennesaret to meet him. Petrel, or little Peter, is a name derived from this well-known event. Sailors observe this little bird, or allied species, to come to the lee of their ships on the approach of storms or during their occurrence. Its long wings, light body, and long legs, ending in webbed feet, are all admirably suited to help it in its rapid motion; and many a scrap and many a minute production of the sea it picks up during its frequently repeated stoops. Its eye is as active as its other motions; and there is a picturesqueness about these, well described by Wilson, and admirably rendered by Gould and Audubon, in their great books on the birds of Australia and America.

The species of the genus *Procellaria* are numerous, and abound in the Southern Seas. Mr. Arthur Adams* says that they differ much in their modes of flight. He describes the Giant Petrel (*Procellaria gigantea*) as flying in a wild and sweeping manner, poising himself, and often remaining motionless in the air. The Cape Pigeon (*P. Capensis*), the back of which is variegated with white and black, has neither a powerful nor rapid flight; while a species, entirely of a sooty black, has a rapid, steady flight, like the wide sweep of some gigantic swift. A species called the "Whale-bird" by seamen, and two others (the *P. turtur* and *P. Forsteri*) describe vast circles in the air, and dart suddenly on their prey. The nostrils, both in *Procellaria* and *Tha-*

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* Voyage of Samarang, vol. ii. p. 231.

lassidroma, are united into a tube on the top of the upper mandible.

In the Shearwaters (*Puffinus*) the beak is lengthened, and the tip of the under mandible is curved downwards; the nostrils are tubular, but open by two distinct holes. The species are fond of congregating, and are often seen together in immense numbers. One of these, the *P. cinereus,* is found in Europe and on the coasts of South America. Mr. Darwin, in his 'Journal' (p. 354), refers to it thus:— "I do not think I ever saw so many birds of any other sort together, as I once saw of these behind the island of Chiloe. Hundreds of thousands flew in an irregular line for several hours in one direction. When part of the flock settled on the water the surface was blackened, and a noise proceeded from them, as of human beings talking in the distance." On examining into the cause of this congregation, Mr. Darwin found that the water was coloured in parts by clouds of small crustacea. He shot one, and found in its stomach a small fish and seven good-sized prawn-like crabs.

In some parts of Scotland the young of the Manx Shearwater (*P. anglorum*), another species, are killed, salted, and eaten with potatoes or cabbage*.

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* Fleming's 'British Animals,' p. 137.

An Australian species (*Puffinus brevicaudus*), called familiarly the "Mutton-bird," is celebrated for its abundance,—no bird, excepting perhaps the migratory pigeon, being met with in such large flocks. Captain Flinders saw a stream of them pass for a full hour and a half: this flock was from fifty to eighty yards in depth, and at least three hundred yards in breadth. On the lowest computation he regarded the number as not being less than a hundred millions; and, as each burrow is occupied by a single pair, he calculated that the burrows of that one flock would cover something more than eighteen and a half geographic square miles of ground. Mr. Gould and subsequent observers have confirmed Flinders's observations. Backhouse, when on Green Island, in Bass's Straits, says that at dusk "the air seemed alive with myriads of these birds returning to roost, so that in looking up we were reminded of a shower of large flakes of snow[†]." These birds, when fresh, are pretty good eating; at all events they form a good substitute for salt meat. Considerable numbers of the young are salted and dried, when, Backhouse tells us, they taste much like red-herrings. In Bass's Straits it is chiefly for their feathers that the mutton-birds are destroyed. As many as two tons and a

[*] Narrative of a Visit to the Australian Colonies, p. 29.

half of feathers have been procured there in one season; so that 112,000 birds must have been killed to produce that quantity, twenty birds yielding only one pound of feathers. Captain Stokes* found that the sealers on an island in Bass's Straits lived chiefly on these birds, and cured them both for use and for sale; he describes the island as being in many parts perfectly honeycombed with their burrows.

Many of the oceanic birds resemble the *Delphinidæ* in their curiosity. Dr. Andrew Smith describes a new species of that broad-billed genus near the petrels, named by Illiger *Pachyptila,* which he names *P. Banksii.* It is eminently a sea-frequenting species, seldom visiting the coast near the Cape of Good Hope, except during very stormy weather. "It is constantly," says he, "to be seen from vessels sailing along the eastern coast, particularly during the winter season; and it has often been a source of amusement to me to watch how perseveringly an individual of this species would accompany a ship, even during blowing weather, without appearing to have any object in view, or to suffer any fatigue or inconvenience†." All voyagers record the gratification they derive from noticing the flight and manners of birds at sea. And why are not birds likely to be adapted for our amusement as well as for our food?

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* Discoveries in Australia, vol. i. p. 264.

† Illustrations of Zoology of South Africa, pl. lv. (*Aves*).

The Albatrosses (*Diomedea*) are among the largest of aquatic birds. Some of the species have been known to keep company with ships for two or three days,

> "And every day, for food or play,
> Come to the mariner's hollo."

They are said to attack men who have happened to fall overboard. Mr. M'Cormick, in his 'Zoological Notice of the Auckland Islands*,' describes the albatross as breeding in considerable numbers on the tops of the cliffs. He found that their nests were formed upon a small mound of earth, and consisted of a great quantity of withered earth and leaves matted together. The nests were about six feet in circumference at the base, and about eighteen inches in height. They are formed by the joint labour of the male and female. The albatross lays only one egg, of a pure white, varying in weight from fifteen to twenty-one ounces. Out of about a hundred nests which he examined, in one instance only were two eggs found. Cuvier, in his 'Règne Animal,' has said that the albatross lays several eggs.

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* Sir J. C. Ross, 'Voyage of Discovery and Research in the Southern and Antarctic Regions,' vol. i. p. 149.

The Gulls (Laridæ) form a widely-distributed family of birds, residing constantly on the sea or in its immediate vicinity, and hardly ever leaving it, except in very stormy weather, when they come to land to look for food. They are distinguished by a rather long beak, which is compressed and pointed, the upper mandible being arcuated towards the tip, while the lower has a projecting angle on its inferior edge; the nostrils are placed near the middle, and are long, narrow, and pierced quite through; they have a good-sized tail, which, with their powerful wings, enables them often to "beat against the wind;" their legs are longish and well set on their bodies, and, the webs being comparatively short, they are good walkers, swimming, flying, and walking with equal ease; and, according to Sir John Richardson, one species at least can perch. That intrepid traveller and able naturalist, on his last Arctic Searching Expedition, observed on the Bear Lake River, the pretty little Bonapartean Gull (*Xema Bonapartii*). He says that "this species arrives very early in the season, before the ground is denuded of snow, and seeks its food in the first pools of water which form on the borders of Great Bear Lake, and wherein it finds multitudes of minute crustacean animals and larvæ of insects. It flies in flocks, and builds its nests in a colony resembling a rookery, seven or eight on a tree,—the nests being framed of sticks laid flatly. Its voice and mode of flying are like those of a tern; and, like that bird, it rushes fiercely at the head of any one who intrudes on its haunts, screaming loudly. It has moreover the strange practice, considering the form of its feet, of perching on posts and trees; and it may be often seen standing gracefully on a summit of a small spruce fir*."

Young gulls are generally mottled with greyish-brown, and in Shetland are called *Scories:* this plumage they retain for a year. The larger species, such as the Great Black-backed Gull, will not allow the smaller kinds to tenant the same rocks or to fish near them, as we have seen in the Shetland Islands. On and over the large mass of rock which seems to have fallen away from Noss Island, this large fine bird may be seen resting or flying, "monarch of all he surveys."

Sir John Richardson speaks of the predaceous habits and voracity of the Short-billed Gull (*Larus brachyrhynchus*), as he observed them during his late search for Sir John Franklin. "If a goose was wounded by our sportsmen, these powerful gulls directly assailed it, and soon totally devoured it, with the exception of the larger bones. In the spring of 1849, when Mr. Bell and I were encamped at the head of Bear Lake River, waiting for the disruption of the ice, the gulls robbed us of many geese, leaving nothing but well-picked skeletons. Mr. Bell, who was the chief sportsman on this occasion, and spent the day in traversing the half-thawed marshes in quest of game, hung the birds, as he shot them, to the branch of a tree, or deposited them on a rock; but, on collecting the produce of his chase in the evening, he found that the gulls had left him little besides the bones to carry. If by chance a goose, when shot, fell into the river, a gull speedily took his stand on the carcase, and proceeded to tear out the entrails, and devour the flesh, as he floated with it down the current. Even the raven kept aloof when a gull had taken possession of a bird*."

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* Arctic Searching Expedition, etc., by Sir John Richardson, C.B., F.R.S., etc., vol. i. pp. 200, 201.

The Ivory Gull (*Larus eburneus*) is so called from the pure white of its plumage; so white, that when resting on ice, it can only be distinguished by its black legs and bill. It is one of the most characteristic inhabitants of the Arctic regions.

Alfred Wallace, in his excellent voyage and travels of a Naturalist*, first sailed up the mighty Amazon in August, 1849. He says that perhaps the most characteristic birds of this ocean-like river are the gulls and terns, which abound there. He gives the following description:—"All night long their cries are heard over the sandbanks, where they deposit their eggs; and during the day they constantly attracted our attention by their habit of sitting in a row on a floating log—sometimes a dozen or twenty side by side—and going for miles down the stream as grave and motionless as if they were on some very important business. These birds deposit their eggs in little hollows in the sand, and the Indians say that, during the heat of the day, they carry water in their beaks to moisten them and prevent their being roasted by the glowing rays of the sun." To complete this scene, he adds that there are other aquatic birds in abundance; such as divers and darters, and that "porpoises are constantly blowing in every direction, and alligators are often seen slowly swimming across the river."

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* Arctic Searching Expedition, vol. i. pp. 201, 202.

The Scissor-beaks, or Skimmers (*Rhynchops*), are allied to the terns, having, like them, short legs, long wings, and a forked tail. The distinguishing character is in the beak, which is strongly compressed on the sides, and is "as flat and elastic as an ivory paper-cutter;" the upper mandible is much shorter than the lower. Mr. Darwin, in his researches, has recorded the habits of the *Rhynchops nigra* (Plate XX. fig. 1). He found it at Maldonado, flying in small flocks close to the surface of a piece of water, which swarmed with small fry. Over this they flew backwards and forwards, keeping their bills wide open, and the lower mandible half immersed in water. "Thus skimming the surface, they ploughed it in their course; in their flight they frequently twist about with extreme rapidity, and so dexterously manage, that, with their projecting lower mandible, they plough up small fish, which are secured by the upper half of their scissor-like bills." Mr. Darwin has seen them repeatedly do this, and observed that, when they left the surface of the water, their flight was wild, irregular, and rapid, and their cries were loud and harsh. It is chiefly at night that they feed, when many of the lower animals come to the surface. Mr. Lesson, in the 'Narrative of the Voyage of the Coquille,' says he has seen the scissor-beak opening the shells of *Mactræ* buried in sandbanks on the coast of Chili; but Mr. Darwin doubts this being a general habit of the bird, from its weak bill, produced lower mandible, short legs and long wings. In the United States the Skimmer is a bird of passage, coming in May and leaving in September. The nest, according to Wilson, is a mere hollow formed in the sand, in which the female deposits three oval eggs. The American ornithologist kept a specimen for several days which he had wounded in the wing; it soon became tame and even familiar, but refused every kind of food offered to it. He says that it never eats but on the wing; the great expanse of these organs enables the bird to sail with sufficient celerity while dipping in the water for its food.

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* Travels on the Amazon and Rio Negro, p. 138.

The Terns (*Sterninæ*) are often called Sea-swallows, from their long pointed wings, forked tail, and short legs. They have a straight, pointed, compressed beak, with the nostrils near the base. Although their feet are webbed, they hardly ever seem to swim, but pick their food dexterously from the surface of the water.

The eggs of some of the terns are of considerable commercial importance. Mr. Hill informs us* that in 1846, four vessels were fitted out from Jamaica, and sailed to the Pedro Kays to collect the eggs of the sea-birds, chiefly terns, which build there. The Noddy (*Megalopterus stolidus*), Egg-bird (*Hydrochelidon fuliginosum*), and Sandwich Tern contribute the greater number of the eggs collected. The noddies build their nests on a stunted tree, at a small elevation from the ground; and as their nests are resorted to for a number of years, and are annually repaired and added to, they grow into huge piles. The egg-bird and the Sandwich tern lay their eggs in cavities of the rock, or in shallow holes scraped on the bare sand. Sir George Mackenzie speaks of the egg of the tern as a very delicate article of food, and says that, during his travels in Iceland, these eggs frequently formed a principal relish in his homely repasts.

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* Gosse's 'Birds of Jamaica,' p. 434.

The rest of the webfooted birds have the thumb united to the other toes by the same membrane; and like the two preceding families, all the species are furnished with long wings and fly well. In this division come the Pelicans, Cormorants, Gannets, Darters, and Tropic Birds.

The Pelicans (PELICANIDÆ) are for the most part a family of largish birds, distinguished by their white or black colours and their large and long bill. At the base of the bill there is in most of them a naked space; the nostrils are small and scarcely visible; the skin of the throat is more or less extensible, and in the true pelicans it forms an enormous bag; the tongue is very small; their hind-toe is united to the others by a membrane, which thus includes the four toes, and makes of the foot a perfect oar. The Darters (*Plotus*) are distinguished by having a very long neck and a small head.

Travellers meet with pelicans in most parts of the world; and those who, like Mr. Fortune, visit China, sometimes see cormorants trained to catch fish, these birds being not only voracious to a proverb, but exceedingly intelligent and docile.

The birds of this family are sociable, and are generally to be met with in flocks. In Flinders's 'Voyage to Terra Australis' he mentions having seen the pelicans rearing their young together in great numbers, on the islets of a hidden lagoon of Kangaroo Island; and he remarks that, from the number of skeletons and bones scattered about, "it would seem that for ages these had been selected for the closing scene of their existence. . . . Nor," adds he, "can anything be more consonant to their feelings, if pelicans have any, than quietly to resign their breath, surrounded by their progeny, and in the same spot where they first drew it." On this passage the poet Montgomery has founded nine highly descriptive and suggestive cantos, under the name of the 'Pelican Island.'

"Nature's prime favourites were the pelicans;
High-fed, long-lived, and sociable and free,
They ranged in wedded pairs, or martial bands,
For play or slaughter. Oft have I beheld
A little army take the wat'ry field;
With outstretch'd pinions form a spacious ring,
Then pressing to the centre, through the waves,
Enclose thick shoals within their narrowing toils,
Till multitudes entangled fell a prey:
Or, when the flying fish in sudden clouds,
Burst from the sea, and flutter'd through the air
These giant fowlers snapt them like mosquitos
By swallows hunted through the summer sky*."

Sir John Richardson found the Rough-billed Pelican (*Pelicanus trachyrhynchus*) as far north as Great Slave Lake, on his late Arctic search. He describes it as being very voracious, destroying still larger quantities of fish than the Fishing Eagle, which abounds in the same district. "These birds," says Sir John, referring to the pelicans, "generally choose a rapid for the scene of their exploits; and, commencing at the upper end, suffer themselves to float down with the current, fishing as they go with great success, particularly in the eddies. When satiated, and with full pouches, they stand on a rock or boulder which rises out of the water, and air themselves, keeping their half-bent wings

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[*] Poetical Works of James Montgomery, vol. iv. pp. 1–114.

raised from their sides, after the manner of vultures and other gross feeders. Their pouches are frequently so crammed with fish that they cannot rise into the air until they have relieved themselves from the load; and, on the unexpected approach of a canoe, they stoop down, and, drawing their bill between their legs, turn out the fish. They seem to be unable to accomplish this feat when swimming, so that then they are easily overtaken, and may be caught alive, or killed with the blow of a paddle. If they are near the beach when danger threatens, they will land to get rid of the fish more quickly. They fly heavily, and generally low, in small flocks of from eight to twenty individuals, marshalled, not in the cuneiform order of wild geese, but in a line abreast, or slightly *en échelon;* and their snow-white plumage, with black-tipped wings, combined with their great size, gives them an imposing appearance. . . . Their eggs are deposited on rocky islets among rapids, where they cannot be easily approached by man or beasts of prey."

Mr. Gosse thus describes the habits of the *Pelicanus fuscus* when searching for its food:—"It is a pleasant sight to see a flock of pelicans fishing. A dozen or more are flying on heavy, flagging wing over the sea, the long neck doubled on the back, so that the beak seems to protrude from the breast. Suddenly, a little ruffling of the water arrests their attention; and, with wings half-closed, down each plunges with a resounding plash, and in an instant emerges to the surface with a fish. The beak is held aloft, a snap or two is made, the huge pouch is seen for a moment distended, then collapses as before; and heavily the bird rises to wing, and again beats over the surf with his fellows. It is worthy of observation that the pelican invariably performs a summerset under the surface; for descending, as he always does, diagonally, not perpendicularly, the head emerges looking in the opposite direction to that in which it was looking before. When the morning appetite is sated, they sit calmly on the heaving surface, looking much like a miniature fleet." Towards evening the pelicans, flying in continuous strings, retire to trees near the sea. The Negroes of Jamaica sometimes eat the flesh of this species, notwithstanding its fishy odour. To remove this flavour in some measure, they bury the bird for some hours in the sand, and then subject it to more than one boiling before they eat it.

The Cormorants (*Phalacrocorax*) have a long beak and hooked upper mandible; the pouch is very small. There are several species, all of which are of a dark colour, and most of them very voracious. The Chinese employ a species to assist them in fishing, which they train and find very tractable. Mr. Adams, during the voyage of the 'Samarang,' was struck with the habits of the Cape species (*P. Africanus*). This bird is very sociable, and unites with its kindred in forming large fishing parties. "They wind their way," says Mr. Adams, "in single file, starting from the rocks along the shore, then swimming in the tranquil waters of the bays, invariably led on by some experienced and sagacious old admiral, they commence their fishing. When their pilot spies a shoal of fish, he suddenly makes a vault out of the water, arching his neck, bending his body, and drawing up his legs, when, diving headlong down, he is followed immediately by all his anxious adherents, who perform their summersets in precisely the same manner. The flotilla remains submerged some little time, when it rises once more to the surface, and the feathered fishers again renew their diving and plunging piscatory evolutions." He describes the cormorants as forming quite a peculiar feature in the coast scenery of the Cape. When seated on the rocks upright and motionless, "they remind you of some magisterial assembly in their sable robes, met together in grave and earnest conclave."

Mr. Waterton has devoted one of his lively essays to the haunts and habits of the cormorant. He justly describes him as the feathered terror of the finny tribe; "his skill in diving is most admirable, and his success beyond belief. You may know him at a distance among a thousand water-fowl, by his upright neck, by his body being apparently half immersed in the water, and by his being perpetually in motion when not on land. . . . First raising his body nearly perpendicular, down he plunges into the deep; and, after staying there a considerable time, he is sure to bring up a fish, which he invariably swallows head foremost. Sometimes half an hour elapses before he can manage to accommodate a large eel quietly in his stomach. You see him straining violently, with repeated efforts to gulp it; and, when you fancy that the slippery mouthful is successfully disposed of, all of a sudden the eel retrogrades upwards from its dismal sepulchre, struggling violently to escape. The cormorant swallows it again; and up again it comes, and shows its tail a foot or more out of its destroyer's mouth. At length, worn out with ineffectual writhings and slidings, the eel is gulped down into the cormorant's stomach for the last time, there to meet its dreaded and inevitable fate*."

* Waterton, 'Essays on Natural History,' p. 161.

To the same family belongs a bird, often met with by sailors at a great distance from land, when between the tropics. It differs from the cormorant in having a forked tail, and much shorter legs, the membranes between the toes of which are deeply notched; its wings are exceedingly long and narrow, and both the mandibles of the bill are curved at the end. This is the Frigate, or Man-of-War Bird (*Tachypetes aquila*); the former of these names derived from its fast flight and great length of wing, the latter from its habit of sometimes attacking other birds and forcing them to disgorge their prey.

The natives of the South Sea Islands, when they were first discovered, set a great value on the shining black feathers of these birds, and, as they were birds of passage, watched their arrival at the rainy season. In the Missionary Voyage of the ship 'Duff' an account is given of the mode employed in getting the birds. "A float of light wood is launched into the water, baited with a small fish, as soon as they observe the bird approaching, whilst they stand ready with a long pole of sixteen or eighteen feet within reach of the float. The moment the bird pounces on the fish to seize it, they strike at him with the pole, and seldom fail in bringing him down*." Should they miss their aim, there is no inducing the man-of-war bird again to approach the bait. The male bird is most esteemed. So fond used the natives to be of the feathers as ornaments, that they have been known to exchange a large hog for a specimen. Here is old Dampier's account of this now well-known bird.

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* Mission. Voy. p. 382.

"The *Man-of-War* (as it is called by the English of the West Indies) is about the bigness of a Kite, and in shape like it, but black; and the neck is red. It lives on fish, yet never lights on the water, but soars aloft like a Kite, and when it sees its prey, it flies down headforemost to the water's edge, very swiftly takes its prey out of the sea with his bill, and immediately mounts again as swiftly, and never touching the water with his bill. His wings are very long; his feet are like other land-fowl; and he builds on trees, where he finds any, but where they are wanting, on the ground*."

The Gannets (*Sula*) belong also to this family. Some of the species have been named "Boobies," from the ease with which they allow themselves to be deprived of their fishy prey by other birds. Mr. Blyth† describes the air-cavities in these birds as being extraordinarily developed: the air permeates all their bones, with the exception of the phalanges of the toes, and even passes under the skin of the breast, which is only attached to the muscles of the body by some scattered connecting pillars. This structure is also met with in the tropic birds, and must give them great additional buoyancy.

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* Dampier, 'New Voyage round the World.'

† Cuvier's 'Animal Kingdom,' p. 260.

The Darters (*Plotus*) have a very long neck and small head, from which they have acquired one of their names, that of "Snake-birds." They are exceedingly shy, and, when approached, plunge into the water, leaving as little agitation on its surface as that occasioned by an eel. It is a widely distributed genus,—species being found in North and South America, in India, in Australia, and one (*P. Levaillantii*) seems to occur in various parts of Africa.

Colonel Sykes says that the Indian species, *Plotus melanogaster,* the Black-bellied Darter (Plate XX. fig. 2), can swim with the whole of its body under water; its long neck, ending in a small head, alone being visible, and strongly resembling a snake. Mr. Gould, who found a new species in Australia (*P. Novæ-Hollandiæ*), says that it dives with the greatest ease to the bottom of the deepest pools, and that it generally swims with a considerable portion of its body above the surface of the water; but immediately on being disturbed sinks it below the water, so that the head and neck only are seen. After feeding, this species usually perches on a snag of some tree which has fallen into the water; where it sits for hours motionless, digesting, in peace and quietness, the fish and frogs on which it has been regaling.

The Tropic birds (*Phaethon*) are distinguished by their two middle tail-feathers being very long and straw-like. They are birds of great power of wing, and very seldom quit the warmer parts of the equatorial seas; so that their presence indicates to the sailor his approach to the Tropics; hence their common name. Their scientific name, as Waterton quaintly remarks, has been aptly applied by Linnæus:—"He has called it Phaeton, no doubt whatever, because it is chiefly to be found in that region where old Apollo's son cut so conspicuous a figure on his father's coach-box. All the world has heard of Phaeton, and of the manner in which he unfortunately broke down in his first and last attempt at four-in-hand*."

In the Ethnographical Room of the British Museum are some very curious and gaudy mourning and military dresses of the South Sea Islanders, amply decorated with feathers. These objects were brought to this country by Captain

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* Waterton's 'Essays,' p. 286.

James Cook and his comrades. Among the feathers are many from the tropic birds. In the Missionary Voyage of the ship 'Duff' in 1796–1798, an interesting account is given of the manner in which the natives collected these feathers. The tropic birds build their nests, like terns and other sea-birds, in holes of the cliffs, and as the natives hold their long feathers "in request for their *paries* and mourning dresses, they procure them in the following dangerous manner. From the top of the high cliffs, beaten by the waves beneath, a man is lowered down by a rope, seated across a stick; he searches all the holes from bottom to top, swinging from point to point by a staff he holds in his hand, and by the stones which project or the shrubs which grow there. When he finds a bird on her nest, he plucks out her tail-feathers and lets her fly." In this way, like the natives of St. Kilda, Foula, and other remote Scottish islands, the natives of the South Sea Islands used to pursue these birds, and when they could find no more, or were tired, they made a signal and were drawn up. To a stranger it seemed very perilous employment for a human being to be dangling by a rope thirty or forty fathoms long, and perhaps one or two hundred feet above the sea. The missionaries record however that but few accidents occurred, though the sport was often continued for several successive hours.

Mr. Tristram has given* some very interesting notes on the habits of a species of Tropic bird common in Bermuda (*Phaethon flavirostris,* Brandt). He tells us that of all the feathered denizens of "the vexed Bermouths" this is the only bird which gives a character to the landscape. It may be seen from early spring to late autumn, incessantly sailing near the shores, uttering its shrill oft-repeated note. The tropic bird is an early riser, and fishes at an early hour. Mr. Tristram has often watched it at sunrise "noisily skimming the surface of the calm sea and gently dipping . . . as they catch up any small fish within their reach, while their pink-white plumage glistens with a soft rosy hue in the sunbeams. I never but once saw a Tropic bird swim; when it did so, the tail was expanded like a fan, perfectly erect, with the long feathers in the centre stiffened as it quarrelled with a comrade over their prey." After midday Mr. Tristram observed this Tropic bird fly to a much greater height; indeed it flew so high as often to be scarcely visible. It breeds on the coast of Bermuda, where the cliffs are precipitous, depositing its egg on the bare rock.

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* Contributions to Ornithology for 1852, by Sir W. Jardine, p. 37.

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